of events aimed to inform USAID of nothing in detail; and (2) that USAID has not developed on its own a clear picture of the frame of reference within which events take place, the system of relationships between Government and farmer. To understand the context within which we must operate we must understand the system of expectations between farmers, local bureaucracy and central government. We must further understand the tactics used by the different groups in dealing with each other in the context of the expectations. We must begin to analyse and understand actions and unpredicted events as parts of a system of related elements, of patterned action that can be predicted.

As a basis for discussion a number of points should be introduced in understanding the total system:

1. Government incomes, taxes of various sorts are low and are poorly collected at the provincial level.

2. Government expenditures in terms of civil servant salaries and general services for the population are low.

3. Expectations for action and innovation among civil servants are low, and condemad if the actions infringe on or are likely to disrupt local and indigenous semi-autonomous systems of power and influence (to be discussed below).

4. "Fees" of an unofficial nature are expected and accepted as part of the system by both the people and the Government, as are minor rake-offs

of government resources so long as they shared and do nct reach a point of being disruptive to the system. As with all systems on the ground, the definition of the term "corruption" (which is much used here) is a matter of definition and levels.

In any case, the low salaries of government civil servants should not be viewed as a cause of the bakshish system (which is commonly done) but a part of a larger, informal system of social expectations and actions. This is perhaps a moot point but an important one if we are to understand the nature of the system with which we must work in our search for alternative actions that will result in basic institutional changes.

The nature of relationships: Basically the relations between Government and the farmers are both paternalistic and distant. As the system functions, these two elements are not in contradiction. The Governor holds the chief paternalistic role to which farmers, large and small, may turn for final decisions on events, usually government actions or demands that will affect some aspects of their lives. This is not to say that the Governor will always make himself available for such confrontations; such decisions will be situational. The range of topics brought to the Governor is also highly selective, village communities normally preferring to keep internal issues to themselves. For some major issues of government, farmers have pointed out that they have refused to deal with lesser officials but have gone directly to the Governor for a decision. And to some unknown degree, the Governor is truly

where the final authority lies in the provincial bureaucracy. To varying degrees, lower level government officials take on the trappings and attitudes of the paternalistic role but with much less power. The paternal relationship is one that combines potential power, respect, and therefore socially distant.

This distant relationship between provincial authorities and locals is respected on both sides. Villages are left, to a great extent, on their own in terms of control of most everyday activity. In the case of the Helmand, local Khans or large landowners in the villages hold the power and control through various systems of patronage and economic dependence. They also control some level of force to back up their position. They tend to control much, if not most, of the land. They either appoint the mirab (the indigenous water master who controls the irrigation water distribution system), have a strong vote in his selection or hold the office themselves. The same pattern applies in the selection of the malik (village headman) whose role has the function of representing the village or any of its members in all situations of official contact vis-a-vis the Government. The villages frequently carry the name of the local Khan. To some degree, these Khans are held responsible for the actions of their "neighbors," i.e., those who are under some form of patronage, by the Government. They are also allowed a great deal of freedom in their indigenous political activities, i.e., perhaps misuse of the water distribution system, which they control, to their own advantage or as

a weapon against others, as long as order is generally maintained and the functioning system of taxes, etc., is not disrupted. A threat to the larger system of government authority and the maintenance of order should be dealt with rather harshly or with force. Little official interest is shown on the part of the Government in the everyday activities of village life and organization because many such activities would call for official action, a confrontation with local power structures, and perhaps and embarrassment to all parties concerned.

In short, officially at the provincial level there is a strong central authority with a great deal of potential power. Functionally, social distance between Government and local units of organization reduces the frequency of situations in which this central authority must be exercised. These local units, e.g., villages, maintain a high degree of autonomy in governing themselves.

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Major changes in the directions of land reform or water control under government authority are a clear threat to the Khans and the established system of order. These, along with other similar issues, are problem areas government officials would prefer to leave alone. A canal right-of-way, for example, affects few individuals directly and is not a true threat to the Khans. The new water source, a canal, alone is a means to greater production and a potential source of more power, depending on how its use can be manipulated. Land registration and consolidation are also likely

defined locally as a possible infringement on local rights, one reason being that it requires the payment of "fees."

The advance communication of information about the details of projects requiring farmer cooperation is a need being unmet by our counterparts who, from time to time, have seemingly convinced AID of the logic of this inaction. The tactic of no, misleading or ambiguous information is used effectively when dealing with the farmers in reducing the likelihood of serious confrontation, organized resistance ~~and the distruption of~~ order. It does not lead to farmer cooperation or trust. The example of the Shamalan seems appropriate.

Early communication of information and exchange on the issue of the Shamalan canal was apparently limited to a number of Khans who no doubt represented considerable power in the area. Based on recent reactions of some of these Khans relative to the land development aspects of the project, however, we can only speculate that this was not part of the early communications. Smaller farmer-landowners contact has been even more limited and recent right-of-way opposition has been headed by such individuals, some of whom have taken their cases to the Governor. In terms of detailed information on the Shamalan project, I have yet to find an individual who could clearly explain any one facet of the project although he may have been in contact with government officials; the reason being that clear explanations are not given by the officials who are faced with the task of explanation. Again, the tactic is understandable. Detailed explanation early in a project in a face-to-face

confrontation could lead to hostility which could be organized or at least solidified on a wide front, Khans supporting their neighbors in opposition. This would lead to disruption of basic relations and order. Something similar to this occurred this past September when final agreement was sought on beginning land development in the first 200 acres of the Shamalan. Vague, contradictory and ambiguous explanations lead only to confusion of what is likely to happen, and leave open the possibility of something acceptable to the farmers. Reality is faced only when the bulldozer, for example, actually appears at the door to begin making its path through the village. Nothing can be done to organize against it, nor to stop it but only short delays caused by individual protest. Promises of compensation (hope) are made to reduce the tension over the inevitable. Officials can claim ignorance of the plan which is stated to be the work of the foreigner. Order is maintained.

The relationship between the provincial and central Governments is similar to that between the provincial Government and the farmers; that is, a system of relative autonomy. Officially the country has a highly centralized form of government; something, when seen by foreign advisers, considered dysfunctional to initiative and innovation. Functionally and unofficially the central Government allows a great deal of power to rest with the Governor and to a great extent success or failure is probably measured in terms of maintaining order, the status quo, no trouble. The central Government

will support his actions directly or indirectly on this basis. If order is maintained, taxes are collected and forwarded, and soldiers recruited (not necessary from all segments of society) the province is successful. This is a close paralled to the expectations of the Ottoman bureaucratic system of the past, which the Afghans apparently used as a model.

In any case, this functional autonomy takes the form of the central authorities not monitoring provincial events very closely in the same way the provincial authorities become involved in village affairs only when they are asked or when order is disrupted,

The functional role of the National Assembly representatives from the local areas is not yet clear but they can be viewed certainly as elements of the local power structure who elected them. They have the ability to call the attention of the central Government to events or the potential of events resulting from undesirable local Government (the Governor) activity. In this way, the representative is a check on the Governor's actions as they are viewed by the local indigenous power structure. He does not function in a political vacuum.

## 3. ACCEPTANCE OF CHANGE

In the initial report on the Paktia project a farmer survey by Professor Herbert Kotter [1] was included. The premise of his survey was that technical economic development always includes social change. Since the technical change is accepted more readily than change in the social system, the survey

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1/ Found in K. H. Hendrickson, et al., Report, Kabul, 1967, p. 45-48

wished to measure the nature of this cultural lag. He attempted to show to what extent certain minimum critical economic actions for social development have been fulfilled in the region; which elements of the social structure work in accelerating, neutralizing or inhibiting economic and social change; and finally, what projections can be made of the probable impact on the social structure by modernizing technical and economic procedures./

> Rregarding the society in Paktia, one cannot say in principle that the values binding to religion and family are standing in the way of the principle of income increase. 1/

The population, or at least the leaders, realize that their economic condition will deteriorate if there is no change, and are therefore, in principle, prepared to take advice and economic risks.

Among the factors that inhibit economic development are an inclination to "conspicuous consumption" 2/ and an "exorbitant" 3/ credit system. High expenditure on weddings and family festivals are customary forms of expiring the agricultural surplus. Weddings can put a family in debt for a whole generation. The prevailing credit system leads to continued concentration of wealth where the solidarity of the tribe does not seem to inhibit exploitation of fellow members.

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1/ Ibid., P. 45

2/ Term used by H. Kotter (op. cit., p. 45) to describe the situation of a subsistance economic equilibrium where the marginal prodictivity of investment is very low.

3/ Although H. Kooter is not explicit as to what "exorbitant" means, interest rates of 25% and higher are not uncommon.

That the individual farm ownership dominates the economic constitution is a promising factor for economic development. At the upper income scale many of the <u>Khans</u> who, from surplus gleaned from agricultural holdings, have expanded into the wholesaling and transport contract business, stretching beyond their village and tribal frontiers. Yet these men have not lost their desire to belong to their tribe or village, and generally, even though they have left the narrow limits of the village, the villagers will continue to accept them as leaders.

> If, however, the wealth differentiation becomes too great, there is a mutual slackening in relatiins, starting from the wealthy man as well as from the poorer villagers. The original agricultural democratic mentality is opposed to . . . negative plutocratic development. 1/

<u>The tribe as a unit of order must be accepted.</u> The tribal organization is a security, not only for the individuality of the member but also as a saving from proletarianization. Any introduction of innovation should try to work within the given tribal order until new institutions can be introduced. Government officials in Paktia, especially the higher ranking ones, are, as a rule, not from the province, and are treated as strangers by the resident population. This does not mean rejection, but it does mean that these strangers cannot be the pinions upon which a development program can be built. Rather it is working through and with the given prestige hierarchy of the village that projects will have the greatest success.

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1/ Ibid., p. 29. The assumption being that the extent of rural democracy in Afghanistan is negatively correlated with variance in income distribution.

In summary, the argument whether or not traditional farmers are efficient is all but passe', but how to get the farmers to operate at the outer frontier of their production possibility curve is of vital importance.

Although the Afghan farmer manifests certain social and economic behavior patterns that are barriers to the transition from traditional ways, it can be taken as a given that the responses of farmers in Afghanistan to improvements in economic opportunities are generally rational in economic terms. Their responses to changes in product and factor prices are significantly positive. Moreover, the observed lag in these responses compares favorably with the observed lag in the farmers from Western countries.

Assuming that there are a dozen or more necessary conditions, all of which must be simultaneously satisfied to bring about the modernization of agriculture, or neither Afghanistan nor any other country developing, could achieve its goal. If we are to assume that although rural community development, land reform, new laws governing landlord-tenancy arrangement, systematization and legalization of water distribution, introduction of new seed, fertilizer and pesticides, farm cooperatives, farm credit reforms, overhauling market facilities, additional feeder roads and transportation facilities, soils and hydrological analysis, irrigation and drainage facilities, effective agricultural extension agents, modern farm machinery and organized agricultural experimental stations, cannot be met at once, attention must now be focused on two critical points.

The MK engineers arrived in 1946, and carried out many surveys in Kabul and in various parts of the country. Most cost estimates for electrification and road construction were considered high by the RGA and were either postponed or awarded to other contract teams. 1/ Only in the H-A Valley were the cost estimates considered reasonable, and consequently a contract was signed and work begum on the Helmand-Arghandab Valley project.

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1/ MK was slated to build the Sarobi Dam in the Kabul River Gorge, but its contract bid was too high and the RGA awarded the contract to Siemens-Schuckert of West Germany. From Peter J. Franck, Obtaining Financial Aid for a Development, The Export-Import Bank of Washington Loan to Afghanistan, U.S. Congress, 83rd Congress, 2nd Session, Committee Print, September 1953. Printed for the use of the Committee on Banking and Currency (Washington, 1954), p. 14, footnote 25; in A. A. Michel, p. 150.

a. How can we determine the priorities and the sequence that effects the most efficient transition ?

b. Can the failure to satisfy any one factor be critical to the transition of a traditional sector ?

# FORMULATION OF A CONSISTENT STRATEGY FOR AN INTEGRATED FARMER-INTENSIVE DEVELOPMENT PROGRAM IN THE HELMAND-ARGHANDAB VALLEY

This analysis is intended as a working paper for discussion. USAID/Afghanistan would welcome comments and suggestions.

The specific objectives of the study were:

1. To expand the understanding of the history of the project, its problems and its promise.
2. To assess the results of U. S. involvement in terms of assisting the nation to reach its stated goals.
3. To develop an analytical approach and evaluate alternative solutions to problems encountered at various stages.

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Helmand-Arghandab Valley Region
USAID/Afghanistan

1. REVIEW OF USAID ANALYSIS AND CONCLUSIONS:

Given the status and extent of the existing capital investment in the Valley; the demonstrated responsiveness of the area's farmers to new technology (notably improved seeds, fertilizer, tractors and double cropping); the favorable natural resource endowment; and, despite the continuing RGA preference for additional capital investment, the awareness of deficiencies in institutional performance of HAVA - (i.e., inept administrative procedures, the revenue shortfall, budget constraints) - the most promising assistance strategy appears to be one that:

- offers the earliest prospect for a significant short-term pay-off;
- applies certain remedies to address the institutional weaknesses;
- encourages the willingness of other, especially multilateral, donors to participate in HAVA's development efforts;
- is well coordinated with other major elements of USAID's assistance to Afghanistan's national programs;
- acknowledges the existence of communication, credibility and confidence barriers characteristic of this Islamic culture and government officialdom, in such a way as to establish new channels to override those which have been blocked.

The main components of this new HAVA/USAID strategy, which takes cognizance of the foregoing, are:

(1) A significant increased farmer information/extension effort, employing both subject-specific technicians (horticulture, farm machinery, on-farm water management, credit, entomology) and area-assigned extension advisers detailed to particular areas (North - Girishk, Sanguin, Seraj and South - Shamalan, Darweshan).

(2) Both the larger number of extension advisers and their access
1 to the proposed multipurpose HAVA Manpower Development Institute, where they can train not only HAVA extension agents but groups of farmers directly, represent the distinctive features of the new agriculture program.

(3) The implementing agency for this farmer-intensive effort is proposed to be a 14-man contract team, 4 of whose members will be primarily concerned with helping to establish the institute; develop curricula and materials; train staff and conduct initial seminars and workshops. The balance of the group will be largely the agricultural specialists described above.

(4) This institute's client groups will range from farmers to extension agents; HAVA administrative, budget and fiscal officers; HAVA operations and maintenance technicians; water masters and ditch riders; as well as senior department heads and policy-level HAVA/HACU officials.

(5) The other major component of the technical assistance effort will be a 7-man project development/groundwater investigation team comprised of a designs/estimates civil engineer; a survey civil engineer; a soil scientist; economist; geologist; and well driller, under the guidance of a team leader.

Their principal task will be to guide and sustain an ongoing program of groundwater assessments; and to review and help evaluate the various capital investment and improvement projects being considered in the Valley. to determine their comparative advantages; and help HAVA select and rank in priority order various alternative investments being considered for implementation during the 4th Five-Year Plan.

2. <u>ASSUMPTIONS</u>:

The major assumptions are:

- that the RGA will provide sufficient budget and manpower resources; agree to permit specific administrative reforms and carry out recommendations for improvements which arise from the institute's program; to permit operation and strengthening of the key functional elements of HAVA;
- the farmers will continue to respond to economic incentives, will accelerate their adoption of innovation practices, and will vary their techniques and cropping patterns as they have

done in the past, to improve the marginal productivity of the land. and that existing entrepreneurship and marketing, transport and storage facilities will expand to absorb and dispose of the larger volume of high value crops that will be produced;

- the major multilateral doners - the IBRD (assisting the Agricultural Development Bank - AFA); the Asian Development Bank (assisting highway development and flood control projects in the Lower Helmand) will continue to provide capital and technical assistance in areas relevant to the needs of HAVA;
- that the various national rural agricultural development programs of USAID, notably revenues, provincial development/Food-for-Work; national agricultural research; and the Afghan Fertilizer Corporation, will continue to have their policies and programs closely coordinated with and supportive of HAVA/USAID objectives;
- that other donors, especially Peace Corps and CARE/Medico, continue to provide specific support in selected specialty areas;
- that the new national Government or its successor, continue to provide leadership, guidance and support to the HAVA program, and particularly assure a level of local leadership,

competence and probity to enable HAVA to effectively carry out its objectives;

- that the short-term pay-off of a farmer-intensive effort will be sufficiently dramatic and visible, so as to encourage a greater allocation of resources in this direction rather than more area-extensive new project area development.

3. **A NEW DIRECTION:**

What is being undertaken is a basic shift of U.S. support from large scale infrastructural installation to a policy aimed to benefit the target group toward whom all previous efforts often fell somewhat short - the farmer.

The tactic is to establish and sustain new information channels to farmers, to provide them with both knowledge and advice in new techniques, and to assure that mechanisms exist to help finance the cost of the inputs required by these techniques - land leveling; tractors and farm machinery; improved seed; fertilizer.

There still remains considerable momentum by the RGA to continue the thrust of past and present area-extensive capital investment, and mounting concern about regression of farm land and irrigation structures through neglect of routine maintenance and promiscuous misuse of water in areas where the system has made it plentiful. The expectation is that this momentum will be first slowed, then checked as capital projects now in process or in the pipeline are initiated and then completed. At the same time, more concerted efforts to improve operations and maintenance should arrest

the rate at which the existing system is being degraded. The intent is to induce a new secular trend of focusing on the exploitation of existing investment rather than making further capital expenditures with distant and slow starting cash flow of returning benefits.

## 4. COMPARISON OF THE FOURTH PLAN AND THE NEW HAVA/USAID STRATEGY:

The RGA's 4th Five-Year Plan chapter for the Helmand and Arghandab Valleys is ambitious, comprehensive and basically congruent with the proposed USAID assistance strategy.

It is, however, somewhat inconsistent in that after initially addressing the main requirement to exploit the existing investment and focus on increasing crop yields, a seemingly disproportionate amount of attention is paid to surveying further capital investment potentials.

The 4th Plan narrative shares the USAID concern for the need to coordinate agricultural research, and expanded extension effort and the speeding up of mechanization, together with an appreciation of the formidable task of maintaining the extensive network of structures, canals, laterals, drains and wasteways. Attainment of production goals is conditioned on the caveat that the required fertilizer will be made available.

The Afghan narrative also addresses animal care and stock breeding as well as a continuing program for the settlement and rehabilitation of landless Afghans, topics on which the USAID proposal is silent.

The most significant divergence, however, is the RGA inclusion of a notable list of new projects, particularly a diversion dam and 30 km canal at Garmak to serve the Sanguin and Seraj areas, which when added to the already projected Chakhansur and Kajakai spillway projects, Central Arghandab and Darweshan activities, sum up to a substantial package of capital investment which far outweighs the proportion of resources planned to be spent on increasing existing capacity utilization. (The Kajakai hydroelectric plant and associated transmission lines, already underway, are only acknowledged briefly in passing.)

One could say, therefore, that the RGA intentions as spelled out in the Plan narrative for the Valley, are somewhat ambiguous, and do not clearly pose a choice between farmer intensivity and area extensivity.

If the USAID strategy is approved within the parameters of the proposed magnitude, one could expect that these inputs could effect a significant shift in Afghan resources as the outcome of the ProAg negotiations with HAVA.

Recently, the RGA has indicated to USAID in a letter that they share our perception of the basic goals and objectives for the Valley, but of course the detailed negotiations could eventuate in a somewhat different emphasis or thrust than that stressed in this sector analysis.

Logframe

1. SECTOR GOAL DEFINED:

a) Raise the standard of living for the farmer population in the Helmand Arghandab Valley by exploiting the extensive infrastructure laid in place by past investments.

b) Provide farmers with economic incentives; adequate supplies of yield increasing production inputs, and competent technical assistance.

c) Focus Helmand-Arghandab Valley Authority (HAVA) energies toward regional agricultural development and the efficient maintenance of the existing irrigation system.

2. PURPOSE STATED:

a) Increase awareness and induce selected farmers to voluntarily accept modern farm practices; water management practices, land leveling and consolidation, as well as other modern farming techniques central to increasing net farm incomes.

b) Stimulate the HAVA to establish and carry out improved management and administration of the area's resources to the benefit of the farmer

3. OUTPUTS:

a) Training Institute:

Provides (1) short-term agriculture courses

(2) management and administration training -

through - formal classroom instruction, lectures, audio-visual aids, seminars, discussion sessions.

Directed at - farmers, extension and research engineering and

## 3. THE FIRST PERIOD OF CONSTRUCTION - MKA (1946-1960)

THE MORRISON-KNUDSEN CONSTRUCTION YEARS WERE AT BEST A CONTROVERSIAL PERIOD CONDITIONING MANY OF THE ACTIONS OF FUTURE U.S. TECHNICAL ASSISTANCE. IN RETROSPECT, THE PLANNING AND ASSUMPTIONS IN PROJECT DEVELOPMENT BY THE RGA AND MKA ARE CONSIDERED WEAK, BUT IMPORTANT LESSONS HAVE BEEN LEARNED TOWARD FORMULATING A CONSISTENT STRATEGY FOR AN INTEGRATED FARMER DEVELOPMENT PROGRAM USING THE BASIC INFRASTRUCTURE LAID DOWN DURING THE DAYS OF MKA.

1. PHASE ONE (1946-49) - SECOND MKA CONTRACT FOR CONSTRUCTION OF DIVERSION DAMS AND ENLARGEMENT OF CANALS; RGA FINANCING.
2. PHASE TWO (1949-53) - SECOND MKA CONTRACT FOR CONSTRUCTION OF MAJOR STORAGE FACILITIES; FIRST EXPORT-IMPORT BANK LOAN; SETTLERS ARRIVE.
3. PHASE THREE (1953-60) - THIRD MKA CONTRACT; SECOND EXPORT-IMPORT BANK LOAN; WATER DELIVERY SYSTEMS CONSTRUCTED; HYDROELECTRIC POWER PLANT INSTALLED; U.S. POINT IV PROGRAM BEGINS; AFGHAN CONSTRUCTION UNIT ORGANIZED; ICA UNDERTAKES INDEPENDENT ENGINEERING STUDY (TUDOR REPORT).

b) Trained Staff:

Capable of - Providing instruction, developing curricula, lesson plans and evaluations in extension, research and hydro-agriculture technology.

c) Former information service/public affairs unit :

Provides - On-farm intensive agriculture extension and supported by information program promoting modern farm practices with direct links to the training institute.

d) Coordinated agriculture program with National Extension, Research Units of M.A.I. and agriculture faculty of Kabul University.

e) Technical capability in hydro-agriculture technology:

(1) Project Development Unit - provides trained personnel capable of conducting project development studies plus groundwater investigations, soil and water surveys, and other water related feasibility. designs.

(2) Operations and Maintenance Unit - provides trained personnel in water management, control and maintenance.

(3) Engineering Unit - provides trained personnel in design and specifications for supply, distribution and drainage systems.

f) HACU - provides efficient support in irrigation system construction.

4. DIRECT INPUTS:

a) USAID -

(1) Technical advisors; Extension (6), Research (3), Engineering (6)

Project Development (6), Operations and Maintenance (3).

(2) Consultants - as required

(3) Commodities - vehicle, laboratory equipment, training materials and equipment, well drilling equipment, engineering supplies.

(4) Annual participant programs - Extension (12), Research (3), Engineering (6), Project Development (5), Operations and Maintenance (3).

(5) Loan - ( possible Asian Development Bank financing - $1.8 million equipment loan )

b) RGA -

(1) Budgetary support

(2) Personnel

(3) Training facilities

c) Other donors -

(1) ADB - capital loan

(2) IBRD capital loans and grant assistance

(3) UK - advisory assistance

(4) Peace Corps - advisory assistance

5. <u>COURSE OF ACTION:</u>

Preconditions: 1) Formal agreement at the highest RGA level on concept and objectives

2) Budgetary analysis of funding necessary to implement HAVA/USAID program

Basic steps to implement: (See Flow Network)* (Annex)

Phase 1 -

1) Contractor/intermediary selection

2) Indepth analysis of existing data by contractor intermediary

3) Develop detailed work plan and schedule to be approved by RGA/HAVA/USAID

Phase II -

4) Develop Training Institute-facilities, curricula, etc.

5) Organize farmer information/public affairs organization

6) Coordinate with ongoing RGA/HAVA/other donor programs

Phase III -

7) Plan surveys and develop statistical base

8) Develop participant programs and nominate participants

9) Define legislation required

Phase IV -

10) Institute - in-country training programs (Training Institute)

farmer information services (Extension)

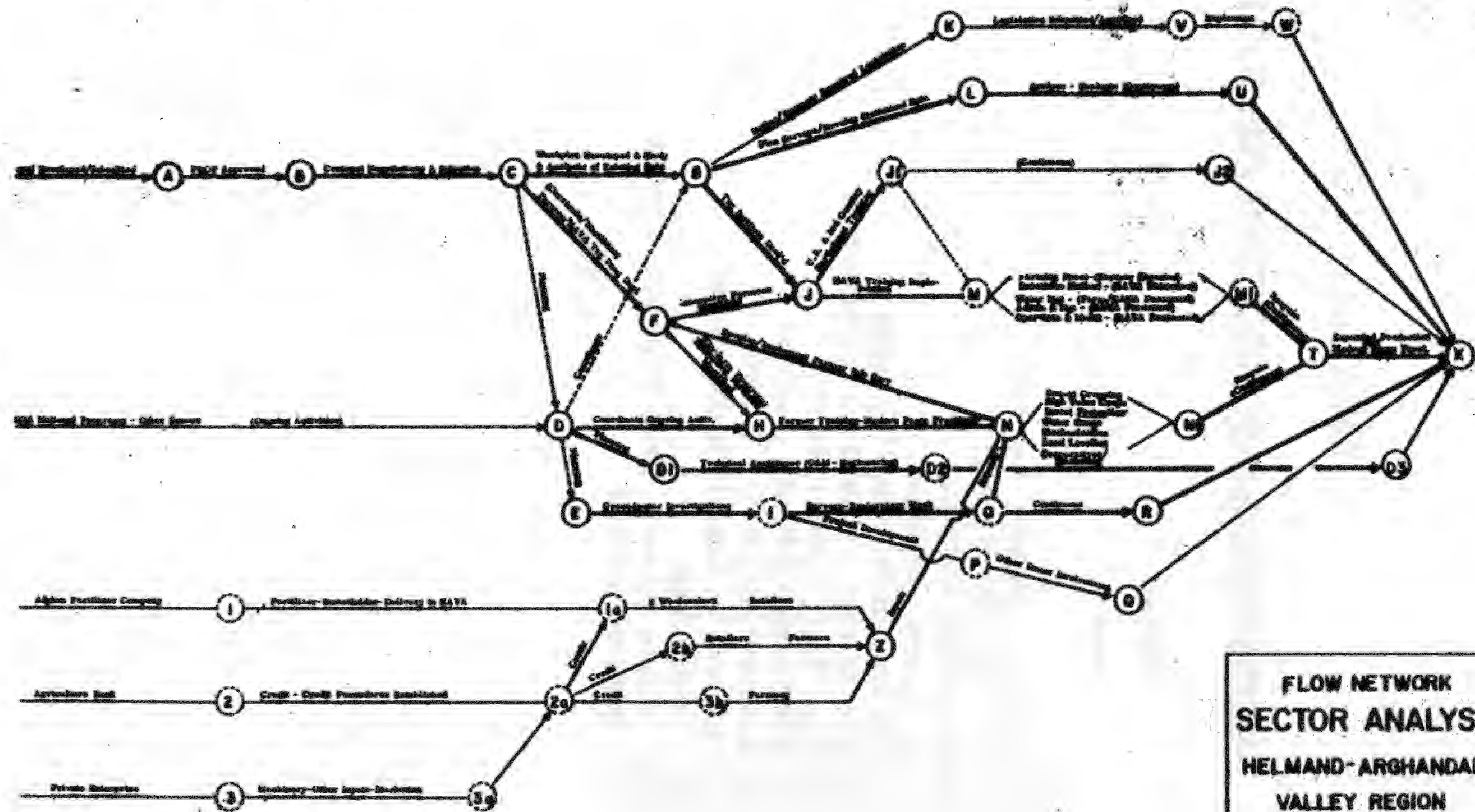
ground water investigations

engineering on-the-job training

operations and maintenance on-the-job training

project development on-the-job training

* A time phased program will be developed for the implementation of each phase not later than six months after contractor selection.



**FLOW NETWORK**

# SECTOR ANALYSIS

**HELMAND-ARGHANDAB VALLEY REGION**

February 1973

## TABLE 1

## KEY PERSONNEL IN HAVA AGRICULTURE DEPARTMENT

| Position | No. of Key Personnel |
|---|---|
| Head | 1 |
| Acting Director General - Research | 1 |
| Director - Agriculture Credit | 1 |
| Director General Extension | 1 |
| Director General -Livestock | 1 |
| Assistant Directer General - Extension | 1 |
| Associate Director - Forestry & Horticulture | 1 |
| Director - Plant Protection Service | 1 |
| Seed Multiplication Officer - Gawragai | 1 |
| Seed Multiplication Officer - Tarnak | 1 |
| Director General - Land Settlement Division | 1 |
| Head - Tractor Shop | 1 |
| Acting Director General - Farm Production Division | 1 |
| Head - Irrigation Division | 1 |
| TOTAL | 14 |

## TABLE II

**EQUIPMENT SCHEDULED FOR REHABILITATION**
**HAVA/HACU LOAN 306-H-012**
**(Abstracted from revised list of April 20, 1971)**

| No. of Units | Estimated Yr. of Mfg. | Equipment Make, Model, Description |
|---|---|---|
| 6 | 1949-52 | Tractor and scraper, Caterpillar - DW-15, 70C |
| 3 | 1949-52 | Tractor and scraper, Caterpillar - DW-15, 45C |
| 5 | 1949-52 | Tractor, Caterpillar - D8 |
| 5 | 1949-52 | Grader, Caterpillar - 12 |
| 1 | 1949-52 | Traxcavator, Caterpillar -977 |
| 3 | 1949-52 | Crane, P&H Model - 955A |
| 2 | 1949-52 | Crane, Northwest Model - 6 |
| 3 | 1949-52 | Crane, Northwest Model -80-D |
| 2 | 1949-52 | Crane, Northwest Model - 25 (2 for Dart truck) |
| 1 | 1949-52 | Steam Cleaner, Malsbury |
| 1 | 1949-52 | Land Plane |
| 3 | 1949-52 | Truck-Tractor, Peterbilt Model-381 |
| 1 | 1949-52 | Truck, Dart, Model 200/456 |
| 4 | 1962 | Truck, IHC Model F1800D |
| 4 | 1949-52 | Forklift, Clark Model - M-6024 |
| 3 | 1949-52 | Ditcher, Briscoe Model - M46-STD |
| 1 | 1949-52 | Ditcher, Buckeye Model 160 |

(Continued)

TABLE II (Continued)

| No. of Units | Estimated Yr. of Mfg. | Equipment Make, Model, Description |
|---|---|---|
| 1 | 1949-52 | Aggregate Plant |
| 1 | 1966 | Concrete Pipe Machine; Hyrotile |
| 1 | 1949-52 | Welding Machine, Metco, Automatic |
| 1 | 1949-52 | Foundry |

## TABLE III

### SPECIFICATIONS FOR ARGHANDAB AND KAJAKAI DAMS

#### Arghandab Reservoir Specifications

Height: 50 meters
Length along crest: 520 meters
Volume of fill: 2,500,000 cu. meters
Storage capacity: 481 million cu. meters (390,000 acre feet)
Maximum valve release: 1,880 Cusecs
Power potential: 9,500 kw
Gross irrigable acres under command of reservoir: 191,058 hectares (225,000 acres)
Net irrigable with proper controls to provide adequate water: 74,262 hectares) (183,500 acres)
Normal water inflow: 987 million cu. meters (800,000 acre feet)
Maximum recorded inflow: 1.675 billion cu. meters (1,358,280 acre feet)
Minimum recorded inflow: 570 million cu. meters (462,170 acre feet)

#### Kajakai Reservoir Specifications

Height: 94 meters
Length along crest: 273 meters
Base width: 400 meters
Volume of fill: 3,225,000 cu. meters
Storage capacity: 1.844 billion cu. meters (1,495,000 acre feet)
With spillway gates: 3.084 billion cu. meters (2,500,000 acre feet)
Maximum valve release: 8,500 Cusecs
Power potential: 120,000 kw
Irrigable area under command of reservoir: 180,000-325,000 hectares (460,000-800,000 acres)

## TABLE IV

## IRRIGATION SYSTEM OF CANALS 1/

| Feature | Canals km | Wasteways km | Laterals km | Sublaterals 2/ km | Farm Ditches 2/ km | Drains km | Project Roads km |
|---|---|---|---|---|---|---|---|
| Boghra Canal | 75.10 | - | - | - | - - | - | 150.20 |
| Darweshan Project | 56.70 | 45.10 | 20.11 | 48.89 | 28.52 | 88.15 | 365.22 |
| Marja Project | 31.06 | 4.90 | 33.72 | 133.52 | - | 545.65 | 494.94 |
| Nad-i-Ali Project | - | 9.00 | 49.19 | - | - | 322.82 | 236.50 |
| Shamalan Project | 73.04 | 5.68 | 12.42 | - | - | 120.67 | 359.67 |
| Central Arghandab Pro. | 43.70 | 1.56 | 0.32 | - | - | 30.48 | 151.48 |
| North Tarnak Project | 10.68 | 0.60 | 9.17 | - | -- | 9.18 | 40.92 |
| South Tarnak Project | 21.32 | - | 5.16 | 24.79 | 26.65 | 53.29 | 160.27 |
| Babajee Area | - | - | - | - | - | 7.07 | - |
| Arghandab Dam | | | | | | | |
| Kajakai Dam | | | | | | | |
| Boghra Diversion Dam | | | | | | | |
| Darweshan Diversion Dam | | | | | | | |
| Arghandab Diversion Dam | | | | | | | |
| Flood Control Dikes (5) | | | | | | | |
| Interproject Roads | | | | | | | 362. |
| TOTALS | 311.60 | 66.93 | 130.09 | 224.41 | 58.17 | 1,177.31 3/ | 2,321.20 |

1/ As of April 1, 1972

2/ Maintained by farmers

3/ Includes interproject roads

TABLE V

KEY ENGINEERING AND TECHNICAL PERSONNEL IN HAVA & HACU

a. ENGINEERING DIVISION

| Position | No. of Key Personnel |
|---|---|
| Director General | 1 |
| Office Engineering | 19 |
| Field Engineering | 10 |
| TOTAL | 30 |

b. PROJECT DEVELOPMENT DIVISION

| Position | No. of Key Personnel |
|---|---|
| Director General | 1 |
| Civil Engineer | 1 |
| Geologist | 1 |
| Economist | 1 |
| Land Classification | 2 |
| TOTAL | 6 |

c. OPERATION & MAINTENANCE DIVISION

| Position | No. of Key Personnel |
|---|---|
| Director General | 1 |
| Assistant Director General | 1 |
| Chief Irrigation Operation | 1 |
| Assistant Chief Irrigation Operation | 1 |
| Chief Water Master | 1 |
| Assistant Chief Water Master | 1 |
| Water Master | 8 |
| Assistant Water Master | 2 |
| Dam Superintendent | 2 |
| Assistant Dam Superintendent | 1 |
| Director, Arghandab Area | 1 |
| Program Director | 1 |
| Director Maintenance | 2 |
| Equipment Repair Superintendent | 1 |
| Foremen (Repair Shop | 8 |
| TOTAL | 32 |

(Continued)

1. PHASE ONE (1946-1949)

In 1946 the Morrison-Knudsen Company, confident of major construction contracts in the H-A Valley with the RGA, established an affiliate, Morrison-Knudsen Afghanistan (MKA) in San Francisco to handle its work in Afghanistan. The RGA turned over to MKA the old palace of Manzel Bagh, east of Kandahar, for use as a base camp and administrative headquarters. The first contract between the RGA and MKA in 1946 was for major transportation and canal system work exclusively in the H-A Valley.

In order to facilitate the movement of heavy equipment arriving from the United States via Pakistan, MKA aligned, widened and reconstructed with loose gravel the Chaman to Kandahar road prior to work on canal irrigation. The MKA also improved the Kandahar-Girishk road to render it suitable for rapid movement of men, material and equipment to the forward operations camp which they established on the eastern bank of the Helmand a few miles above Girishk. These constructions were deemed by MKA as necessary pre-conditions to efficient irrigation construction.

The first contract work in the H-A Valley was to build two diversion dams and enlarge and extend the Boghra canal so as to provide water both for the Nad-i-Ali and Marja terrace tracts and the Helmand flood plain (henceforth called Shamalan area, designating all the flood plain watered by the Boghra canal). By 1948 construction of the diversion dams and the first 30 kilometers of the Boghra canal were well underway.

TABLE V (Continued)

d. HACU

| Position | No. of Key Personnel |
|---|---|
| General President | 1 |
| Legal Officer | 1 |
| Vice President (Administration) | 1 |
| Vice President (Technical) | 1 |
| Director - General Supply | 1 |
| Director - General Services | 1 |
| Director - Finance Management | 1 |
| Director - Personnel | 1 |
| Director - Engineering | 1 |
| Director - Construction | 1 |
| Director - Maintenance Shops | 1 |
| Assistant Director | 4 |
| Senior Engineer - TCN | 1 |
| Supply Advisor - TCN | 1 |
| Cost Engineer - TCN | 1 |
| Office Equipment Repair Man - TCN | 1 |
| **Funded under Loan 306-H-012:** | |
| Field Superintendent - American | 1 |
| Office Manager - American | 1 |
| Master Mechanic - American | 1 |
| Mechanics - American | 3 |
| TOTAL | 25 |

NOTE: In addition there is an adequate complement of Afghan Field Superintendents, foremen, and approximately 900 craftsmen and laborers.

From the outset, the project was plagued by basic cross-cultural misunderstandings and technical miscalculations. Neither the Afghans nor the Americans initially anticipated the problems which would develop in having to ship all the necessary equipment halfway around the world, and then move it by rail and roads through Pakistan. The closure of the Afghan-Pakistan border because of the unsolved "Pushtunistan" problem brought construction to a virtual standstill several times.

> Major human problems were ignored by both sides: who, for example, would settle the reclaimed land, and how would those old villagers living in the areas to be affected be informed of the project in order to prepare themselves for the additional amounts of water which would flood the landscape; who would control water distribution; how would the water be distributed; who would pay for the water? Afghans accused Americans of cheating (Americans accused Afghans) and what little good will that had existed at the beginning began to disappear. 1/

It was at this point that the project was to take a dramatic shift -

> By the fall of 1948, the Government (RGA) had mixed feelings about further Helmand development. . . the diversion of water to the tablelands during the low-water season would take water away from bottom lands downstream unless an upstream reservoir stored flood water. While prestige considerations suggested completion of the limited Boghra project, economic wisdom seemed to advise an enlargement of its scope before continuation. The growing shortage of exchange (FX) forced a decision.
>
> MKA advocated an integrated valley development, including a major reservoir dam upstream at Kajakai; and completed field surveys for the dam by September 1948. For a comprehensive project M-K was reluctant to count on more than 400,000 acres for irrigation and settlement until a thorough survey of the entire Valley had been made. But the Afghans saw no need for such

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1/ Louis Dupree, Draft, p. 78

a survey. M-K and "the mission" (Afghan economic mission to Washington) concluded that even a 20 percent margin of error in estimating the acreage or water supply could not detract from the project's intrinsic value.

> A comprehensive project, based on intelligent guesses by M-K and "the mission" was estimated to cost $63.7 million, with $53.7 million of it in foreign exchange. 1/

While this proposal was being mulled over, work on the Boghra canal continued. With all the misgivings, it is uncertain to what extent loss of face by both the RGA and MKA was critical in not calling to a halt the half-completed Boghra works, especially in view of the soil and drainage problems which were becoming manifestly apparent. Nor is it certain to what extent financial considerations forced MKA to continue work on the Boghra.

> Delaying work might have meant operating at a level that was uneconomical for MKA and thus ultimately for RGA, given the facilities, equipment, material and manpower that had already been brought into the Valley. It appeared that a level of spending of $4 million per year was necessary to keep MKA operating at a break-even point. 2/

As of September 1, 1949, the Afghans had paid MKA $11.1 million for machinery from the United States and Pakistan and $8.9 million for services and purchases in Afghanistan (inclusive of $1.3 million contractor's fees). About $4.8 million of this was the value of locally purchased machinery, equipment, and costs of construction of camps and shops.

By the end of the first RGA-MKA contract 57 kilometers of the canal had

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1/ P. J. Franck, footnote 28, p. 17

2/ A. A. Michel, p. 154

been dug and the concrete siphons passing under streams or washes were completed. But it was becoming painfully clear that the major construction work that was being proposed by MKA to accomplish the RGA's objectives for the next phase could no longer be financed by domestic funds alone.

At the national level Afghans at this point were experiencing foreign exchange shortages, rising costs, and growing criticisms of expenditures on the MKA projects. The Government, still confident of the viability of the scheme, submitted a request to the Export-Import Bank for a loan of $55 million to finance various capital projects planned throughout the country. The Bank position was that it would give priority to agriculture schemes to eliminate the repeated food shortages in Afghanistan. In November 1949 the Bank approved a $21 million loan to cover only the major investment proposals of the H-A project, but critical groundwater and soil surveys proposed both by MKA and RGA were deleted from the loan.

2. PHASE TWO (1949 - 1953)

The first efforts of MKA in its second contract were to tackle technical problems arising from earlier canal work. Leakages from the Boghra canal and its laterals combined with poor irrigation practices in the newly developed areas soon brought the water table in the Nad-i-Ali area up from a depth of 5.3 meters to within 10 centimeters of the surface. Although no groundwater survey had been made, the increasing surface salt accumulations afforded visual evidence of the poor drainage characteristics of the tract and particularly,

of the seriousness of the problems of impermeable substrata which had previously been underestimated. The lining of canals and laterals, the installation of drains, and particularly the training of settlers in better water usage practices had now become critically important.

Aside from canal construction and rehabilitation, a major portion of the financial commitment of the first Export-Import Bank Loan was expended on the construction of two major storage facilities (the first step toward an integrated regional approach):

1. The Arghandab Reservoir, a combination storage and power dam, situated 45 kilometers north of Kandahar, was begun in June 1950 and completed by January 1952 at a total cost of $7,049,114, 1/ with an estimated saving of $2.5 million over the original contract estimate. Storage capacity is given at 481 million cubic meters - 390,000 acre feet; gross irrigable acres under command of the reservoir, 191,058 hectares or 475,000 acres.

2. The Kajakai Reservoir, situated 90 kilometers north of Lashkar Gah, required major raod construction from Girishk. The reservoir was begun in May 1950 and completed by June 1952 at a total cost of $13,431,164.1 1/ Storage capacity is given at 1.8 billion cubic meters or 1,495,000 acre feet. Gross irrigable acres under command of the reservoir is stated as 325,000 hectares or 500,000 acres.

During the period of the first Ex-Im Bank loan, the division of tasks between

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1/ No breakdown as between local and foreign currency available.

the RGA and MKA began to go askew. MKA's task, from the first, had been to construct dams and intakes, main canals, waterways, laterals and sub-laterals. [1] From these constructions, the RGA and the settlers were to construct feeders and farm ditches to bring water to land which had previously been demarcated, leveled and prepared for crops. But the Afghans fell so far behind with their part of the task that in 1951, they asked MKA to assume the responsibility of completing the job for 6,500 hectares in the Nad-i-Ali tract.

Within a year, the contractor had completed drop structures and lateral outlets on the Boghra canal to the end of the Nad-i-Ali tract and had also completed the land preparation as requested by the RGA. The Afghans were over the same period to begin moving settlers into three areas: Nad-i-Ali, Marja, and Shamalan. [2] But while 4,250 hectares of new land were under cultivation, only 10 percent was being worked by settlers. Large landowners were farming 57 percent, the RGA had incorporated 19 percent into an experimental farm and MKA was farming the remainder.

Delays in settlement were caused by bureaucratic procedures. The process by which a farmer could obtain land appeared simple on paper, but normal

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1/ The first RGA-MKA contract provided bonuses for early completion dates. This expensive clause was removed from the second MKA-RGA contract (1951).

2/ The Shamalan already contained several old villages; and the farmland, along with that of Darweshan farther down the Holmand, was owned primarily by large landowners. From Louis Dupree, Draft, p. 81.

bureaucratic delays often expanded the application-acceptance time to months and even years. Settlers desiring land would apply to the Ministry of Interior or directly to the Prime Minister's office. 1/ The Prime Minister would decide whether the applicants would go north (to parts of Qatangan Province and to other areas that were also being developed) or south to the Helmand Valley.

Meanwhile, 15,000 settler applications had piled up due to the lack of administratrative machinery in processing them. Finally, under pressure from the Export-Import Bank, the RGA established an autonomous Helmand Valley Authority (HVA) to process settler applications, determine plot sizes, and farm and village locations. The HVA was also designated to help the settlers construct their homes and prepare their land and to teach improved cropping and water use practices. HVA decided that each family should receive 30 jirib (5.8 hectares of land), 2/ a ready-built house, agricultural implements (plows, shovels, hoes, etc.), one pair of oxen per two families, a grant of 2,000 afghanis and enough seed for the first year, valued at an additional 1,000 afghanis. All the above was considered a loan payable without interest

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1/ Rarely did an individual apply other than as a member of a group. Generally, local leaders would lead their people, Moses-like, to the promised land. The HVA, however, always informed the new settlers they could choose new village leaders, to be called wakil, if they so desired. None did. From Louis Dupree, p. 81.

2/ Experts from the Ex-Im Bank had advised an increase in the farm size from 4 hectares to 5.8 hectares per settler and the adoption of irrigated pasture for sheep and cattle with wheat sown only on one fourth of the acreage in any given year. The HVA agreed to increase the plot size as recommended, but the task of converting grain-growing traditional farmers to animal husbandry was to prove impossible.

in 17 equal payments over a 20 year period, with a 3 year period of grace to permit the settlers to become adjusted. With the total debt of about 17,000 afghanis per family, annual payments would be about 1,000 afghanis. In addition, a new villager was exempt from military service for his first six years of residence in the Valley. The Government also constructed a central bazaar and mosque for the use of the seven villages, plus an administrative center. In spite of attempts by the HVA to prevent absentee ownership, large landholders were in some instances able to pass off tenants as genuine applicants for land

Originally about 1,300 families moved into the area, 90 percent of whom were impoverished kochis (nomads), welcoming the opportunity to become independent landowners. But within a few years 300 kochi families had departed. Reasons given were that the land was of very poor quality and plagued by a high water table which, after plowing, resulted in salts quickly percolating to the surface. The kochis were not trained irrigation farmers, and bad farm practices on marginal lands only aggravated the salt problem. The Government further augmented the problem by forcing different tribal groups to live in the same village.

By April 1953, the funds of the first Export-Import loan were nearly exhausted. After seven sporadically interrupted years of work with the expenditure over 1.6 billion afghanis, the RGA had storage dams on the Arghandab and Helmand Rivers, a diversion dam and two long feeder canals on the Helmand River and some 7,500 hectares of partially developed, sparsely settled land in the Nad-i-Ali terrace area. It had become obvious that a system of deep

## 1. THE PHYSICAL ENVIRONMENT

THERE EXISTS IN THE HELMAND-ARGHANDAB VALLEYS AN ENORMOUS POTENTIAL FOR EXPANDED AGRICULTURE PRODUCTION BECAUSE OF IDEAL CLIMATIC CONDITIONS AND AVAILABILITY OF WATER.

drains would have to be incorporated into the Nad-i-Ali project and the East Marja tract, as well as further lining of the Boghra to prevent leakages into the Nad-i-Ali water table. The proposed West Marja project had been completely abandoned, saving $844,000, but this in turn created technical complications. The Boghra canal had been designed to serve both the East and West Marja tracts. By not developing one part of the land area, the flow of water through the canal decreased in this case from 762 cubic meters/second to 488 cubic meters/second. This in turn increased the silting rate of the canal. Thus, in the case of the Boghra canal not only were investments misallocated on over specifications of the canal construction, but additional expenditures would be required to operate and maintain the canal.

3. PHASE THREE (1953 - 1960)

Whereas 1948, with the decision to construct two storage reservoirs, was to mark the point where the project took a dramatic swing toward a regionally extensive, capital intensive project, 1953 was the date from which the project was to be inextricably labeled an American endeavor. In that year under the United States Point IV Assistance Program two agricultural extension advisers were sent to the H-A Valley. From that point on, the fate of the Helmand Valley and the prestige of the American aid program became, rightly or wrongly, tightly intertwined. Previously MKA had maintained agronomists, hydrologists and soil technicians on its own staff. With the assignment of ICA agronomists, hydrologists, extension supervisors, community development specialists, public health advisers and administrative

specialists to assist the HVA, the Afghans could hardly fail to interpret this as a tacit endorsement by the United States Government of the RGA-MKA contracts over and above that which had been implied by the Export-Import Bank loan.

The project development was nowhere near completion. An extension of the MKA contract would be necessary. But with the first loan almost exhausted and with little tangible benefits to show for the amount of money invested, some document was needed to justify added commitment to the Valley. Consequently an optimistic 87 page prospective was prepared including economic justifications for continued investment with the projection of income from the Helmand and Arghandab areas to the year 2050. The Helmand Valley Development Program [1] projected the area to gross enormous increases in area production upon project completion but any substantive analysis was egregiously lacking.

Armed with the report, a proposal for a second loan of $38 million was submitted by the RGA to the Export-Import Bank. The plan called for drainage systems in East Marja and the Shamalan, and land development of the East Marja tract. It similarly proposed to build a new intake structure on the

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[1] The Helmand Valley Development Program, July 1953, written by a committee chaired by Mr. Tolbert, Chief of the ICA for Helmand Valley operations. The committee was composed of ICA, HVA, Export-Import Bank and MKA representatives with some participation by the Food and Agriculture Organization of the United Nations and the U.S. Embassy in Kabul. Some of the analysis by Claude L. Fly is incorporated, but Mr. Fly states explicitly that the conclusions are a result of the committee's work. Subsequent to the 1953 publication, a similar publication appeared in September 1955, to be revised again in December 1956. Considerable doubt remains in the mind of the author as to the authorship of these publications and the subsequent vercity of the analysis.

Helmand, midway between Kajakai and Girishk, complete with canals, laterals and trunk drains to serve the Seraj area. The proposal also called for installation of generators on the Boghra drop structure near Girishk, and for the construction of a complete power plant at the Arghandab dam. A diversion dam was to be built downstream on the Arghandab to serve canals extending on both sides of the stream. One of these proposed canals, the South Arghandab canal, was to extend as far as the Tarnak region south of Kandahar and between the Arghestan and Tarnak Rivers (see map). The plan further called for development of the Darweshan flood plain area downstream from the Shamalan and the opposite bank of the Helmand and of part of the Chakhansur Basin at the end of the river to utilize excess water stored in the Kajakai Reservoir. All these investments were deemed necessary to reap the potential benefits of increased irrigated land. 1/ In July 1953, the Export-Import Bank granted a loan of $18.5 million, roughly half the sum requested. The Bank specifically excluded Arghandab power, the right bank "North Arghandab Canal," Tarnak drainage and the entire Seraj and Chakhansur proposals. 2/

Between 1955 and 1958 work continued on improving the water delivery

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1/ Included also in the RGA proposal was a request for assistance in paving the streets of Kabul. This was excluded from the second loan, only to be immediately accepted by the Russians and to serve as one of the Russians' first successful public relations aid programs in Afghanistan.

2/ Development of the Lower Helmand posed a delicate political problem. The RGA insisted that the Lower Helmand development was the only way to reap full benefit of the investment in the reservoir, while the American policy makers feared the political repercussions of cutting a major portion of the flow into Iran.

systems in the areas of first loan constructions. The Marja irrigation and drainage outlet systems, the drainage outlet system for part of the Shamalan area, and a portion of the drainage outlet system of the Nad-i-Ali area were completed. But work within the second Ex-Im Bank loan also expanded to new areas. Construction was begun for the area below the Shamalan (the Darweshan area), wherein a diversion dam and drainage were installed. In the Arghandab River Valley, a diversion dam was constructed to divert water into the South Arghandab Canal. A new canal, which was to be almost 17 kilometers long upon completion, would bring water to feed five of the largest traditional canals in the central Arghandab area as well as to the new proposed Tarnak canal. The Tarnak canal would transport water for 26 kilometers from the bifurcation to a point across the Tarnak River in the northeast corner of the Tarnak area (see map). During this period of the second loan the first unit of the north branch Tarnak irrigation canal was constructed. 1/

During the same period extensive project and interproject road construction was carried out; two of the three generating units of the Girishk hydroelectric power plant were installed and transmission lines to Girishk and Ghan-i-Angirs, Nad-i-Ali, Marja, and Lashkar Gah were completed as well.

The Afghan Construction Unit (ACU) was instituted under the 1954 loan agreement to satisfy the RGA's desire to create an Afghan organization that would

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1/ It must be mentioned that this work in the Arghandab River Valley was similarly begun before adequate soil and engineering surveys were completed; and the ramifications of this insufficient planning were to arise only by the mid-1960's.

eventually replace the American MKA. This organization was planned as a construction unit wherein Afghans would be trained in the various fields of engineering construction, equipment maintenance and administration. The work planned for ACU during this period was primarily land development, the development of the government-owned lands and the tracts brought under new irrigation systems constructed by MKA. The work consisted of clearing, leveling and the installation of sublaterals; and the farm irrigation and surface drainage systems in the Marja and Shamalan areas. The ACU was also given the responsibility for the operations maintenance of all canals and interproject roads.

By October 1957 the two Ex-Im loans had been exhausted with the projects only 68 percent complete. It became evident progressively that earlier costs were grossly underestimated and returns overestimated. Foreseeing the need to salvage H-A Valley which had become identified as an American project and which had absorbed an average of 19 percent of the total Afghan development expenditures for several years, ICA decided to undertake the first independent engineering study made of the Helmand Valley project. The Tudor Engineering Company, under the leadership of the former Governor, Leonard B. Jordan of Idaho, was called upon to make an "unbiased" [1/] survey of the accomplishments and the problems which had arisen to date.

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1/ It may be merely coincidental, but both Tudor Engineering Company and the MKA were from Idaho.

The field team arrived in Afghanistan for a six weeks' observation and study tour; with the subsequent report, The Tudor Report,1/ submitted to ICA in November.

The relatively short period spent in the field, combined with the complexity of the project, compelled the team to rely on secondary source materials. They were in no position to make an independent study but were heavily dependent upon drafts of Soil and Water Resources of Southwest Afghanistan 2/ for most of their data. The Tudor Report brought together into workable and debatable form most of the relevant information available to that date. It presented its recommendations in the form of a two-phase program. Phase one discussed the constructions that were nearing completion, while phase two considered the work that could be deferred for a number of years. The report thus formed the basis for the relative priorities to be assigned to the various portions of the project and the resulting financing necessary over the next five years.

Under the third RGA-MKA contract the Tudor Report observed that the

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1/ Report on the Development of Helmand Valley, Afghanistan, Tudor Engineering Company, Washington, D. C., November 1956; prepared for International Cooperation Administration, Washington.

2/ Soil and Water Resources of Southwest Afghanistan, International Engineering Company (IECO), Land Development Division, Engineering Development Division, Engineering Department, Morrison-Knudsen Afghanistan, September 1957. This publication represents the most complete survey of the area. Unfortunately, most of the original data has been lost; all that remains are several copies of the final draft.

primary irrigation and construction work was proceeding at a much faster pace than the corresponding land development work for which the ACU was responsible. In order to narrow this gap, it proposed postponing to the second phase, certain development areas and concentrate efforts of both MKA and ACU on a much smaller area. Specifically, it was recommended that:

> Phase I include construction and land development in Marja, Shamalan, and the upper two-thirds of the Darweshan areas, with limited provisions for improving the supply of water to a portion of the Tarnak area. Phase II would cover development of the Seraj area and the lower third of the Darweshan area, and might also include the Tarnak area, if and when the water supply to the area has been proven adequate by better conservation or more storage, or by a combination of both. 1/

Analysis:

Whereas, consolidation of construction activities was justified on technical grounds, the analytic base for the study's assessment of the actual and potential benefits of such an approach to the transition of traditional agricultural production is considered weak. At first the report is candid in its observation that the past estimates of irrigable land and the potential increases in the value of crop production which would eventually occur, were "in the light of present knowledge. . . very optimistic." 2/ Likewise -

> . . . estimates of production which are presently being used to determine the economic feasibility of projects take for granted a high degree of farmer skill and efficiency which Afghan farmers do not now possess and are not likely to attain in the foreseeable future. 3/

1/ Tudor Report, p. 6

2/ Ibid., p. 1

3/ Ibid., p. 2

Yet, in a following paragraph it states that since its conception, the project land, irrigated annually, has increased by about 42,089 hectares, adding 205 million afghanis per year to the gross regional production. [1] The only way the Tudor Report could justify such enormous gains would be to arbitrarily assume that there was no production in H-A Valley prior to 1946. At the same time the Tudor Report attempts to demonstrate the great potential of the project:

> . . . upon completion of the development program now authorized and underway, 81,805 hectares of land are scheduled to receive irrigation water through newly constructed distribution systems, and an additional 136,661 hectares will receive an augmented and regulated water supply for use through existing privately owned canals. [2]

Just how the project developments would accomplish such ambitious results is not elaborated.

The Tudor Report, aware that the achievement of their projected gains depended upon considerations other than land development, suggested large package of investments to remove various constraints to increased production. Included were an expanded extension program, rural development, education, public health, farm credit program, public administration assistance, and the encouragement of handicraft and industrial expansion. In all,

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1/ New income from the project was estimated by Tudor at $10 million; IECO report had estimate of $5 million, while the Afghan Director of HVA at the time of the Tudor Report estimated it at only $1 million, which he stated was a result mostly from backed up waters from the Arghandab Dam enabling double cropping around Kandahar. (from G. K. Fitch Report, Johns Hopkins, State Department Program Course, October 1958, p. 331.) The new income estimates are not directly comparable to data used in IRR analysis that follows and are taken to be mere guesstimates.

2/ Tudor Report, p. 1

the Tudor Report recommended 14 positions for U.S. specialists (included were a social economist, rural development adviser, handicraft specialists, O&M specialist, public health team, irrigation engineer, an agriculturist, and plant pathologist-entomologist) to assist HVA. 1/ No development methodology was included aside from the list of advisers required.

The nature of capital intensive approach to regional development that had spread over a relatively large area, requiring a large package of heavy machinery, was putting a strain on the transportation system. The Tudor Report recommended the creation of an integrated transportation system linking the Helmand Valley with Pakistan and the port of Karachi.

> In view of the importance of transportation facilities in the development of the Helmand Valley, it is recommended that efforts be made to work out an in-transit trade agreement with Pakistan which might include a bonded warehouse in Karachi and a railway spur over the border at Spin Baldak with necessary storage and handling facilities. 2/

Subsequent to this recommendation, Koebig and Koebig of Los Angeles was contracted to make a specific survey of the problem of transits through Pakistan. 3/ Their analysis confirmed the Tudor view, outlining a specific

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1/ Subsequent ICA had great difficulty in recruiting men to fill these positions; some were unwilling to live in the H-A Valley. Suggestions were made to hire younger professionals more willing to endure the hardships (G. K. Fitch, p. 43), but instead the project chose to change the physical environment and make the desert comfortable by Western standards.

2/ Tudor Report, Recommendation 11, p. 8

3/ Koebig and Koebig, Transportation Facilities of Afghanistan, Los Angeles October 1957

program of road, rail and harbor improvement and recommended in the strongest terms that a transit and trade agreement be signed with Pakistan as soon as possible to implement the project. With the submission of the report in January 1958, ICA promised that if a bilateral agreement could be negotiated successfully, ICA would provide a grant for funding all Phase I of the project, [1] as outlined by the Tudor Report.

The RGA preferred to have a national railway (even though the K & K estimates were that a break-even operation would require a 70-fold increase in volume); or at least a rail spur at Torkham with the road paved to Kabul instead of between Quetta and Kandahar. In any case, in June 1958 an agreement was ratified that would give Afghanistan $19 million for a two land asphalt surface on the 104 kilometer Spin Baldak/Kandahar road, rebuilding of roadbed and structures and a one lane asphalt surfacing on the 445 kilometer Kandahar/Kabul road (to be expanded to a two lane highway at a later date). [2]

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1/ G. K. Fitch, Report, John Hopkins, State Department Program Course, October 1958

2/ Only the portion of the Spin Baldak/Kandahar road is included in the investment schedule of the IBR. Although subsequent studies of the Helmand-Arghandab project costs have excluded the Spin Baldak road as a project expenditure, it can be argued that the road construction is an integral part of the project. The recommendation was born originally from the Tudor Report and it stated that the "future prosperity of the Valley would depend in very considerable part upon the smooth and rapid transit of goods through Pakistan, and it is essential that such transit be made as easy as possible. Existing difficulties and delays, particularly in shipping goods to and from Karachi, constitute a serious burden upon trade, increase the cost of development, and may well retard the Valley's economic growth." Tudor Report, p. 167

The Helmand-Arghandab river system covers the largest watershed area in Afghanistan. The watershed, originating in the Hindu Kush mountain range 40 kilometers west of Kabul, is estimated to cover 361,305 square kilometers or about 40% of the country's total run-off. Most of the river system's stream flow accumulates in the headwater areas, either from rainfall at the intermediate elevations in the winter and spring, or from snow melt at the higher elevations during late spring and early summer. The lower sections of the basin are desert areas with little or no water flow, except for flash floods which result from intense but usually localized rain storms.

Precipitation in the central section of the basin, at or near Lashkar Gah, averages 135 millimeters with a minimum recorded precipitation of 94.8 millimeters and a maximum of 195 millimeters. Precipitation near Kandahar, the principal city of the Valley, is slightly higher at 180-200 millimeters annually. Almost all of the rain occurs from November to April. This fall and spring rain supplies a marginal part of the moisture required for spring crop production, while all the water supply for summer and fall crops must come from irrigation.

The Helmand River is the largest river in Afghanistan. Although its water flow varies from season to season and year to year, it is one of the few perennial rivers in Afghanistan accounting for 5/6 of the Valley system's total water flow. From its source in the Pagman range, it flows in a southwestwardly direction for 536 kilometers into the desert plain where it joins

It was admitted that local currency for both roads (nearly 80 million afghanis), would be a strain on the country's budget but -

> Afghanistan will now have free access to the sea, no transit tax for goods, vastly lower costs for exports and imports, and a great saving of time over the present 2-4 months transit time required to get the goods from Karachi to Kabul. 1/

The MKA era ended with the termination of its third contract in 1959. 2/ When the contractual arrangement between the RGA and MKA terminated, the project could be considered only partially complete. Most areas of the H-A Valley project, particularly the Shamalan, Darweshan, Central Arghandab, and Tarnak, were only in construction. Efficient irrigated agriculture was not possible over much of the areas for which supply canals had been provided. Although the Marja and Nad-i-Ali areas had been provided fairly elaborate distribution systems, and considerable drainage work to overcome very bad waterlogging and salinization problems, much work still had to be done.

Criticism of the MKA work in the H-A Valley had been varied. The company did not satisfy its contractual agreements. Two technically first class dams, a series of main and lateral canals and drains, a system of roads linking the various projects, and a small electrification program had

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1/ G. K. Fitch, p 25

2/ The small hydroelectric plant of about 3000 KVA constructed on the Boghra canal about midway between the diversion dam and Girishk was one of MKA's last jobs in the H-A Valley.

been accomplished in the fifteen years of contract construction. But MKA was more than an engineering team contracted to build specific structures; it had general development responsibilities.

> The fault lay in the lack of understanding of the responsibilities of a foreign company which introduces a major development project on the landscape of a developing country. Since the Helmand Valley project affected 40% of Afghanistan, I suggest that the company involved had some responsibility for what happened to its beautiful dams, canals and roads after it departed. 1/

The MKA period is a classic example of the backward approach to irrigation development. The dams built first, then attention turned to preparation of lands to be irrigated, then to testing of soils, then to teaching the settlers how to irrigate, then to teaching the teachers. By the time MKA left it was still not certain who owned what.2/ An important lesson can be learned. As long as the river flow can be used to expand the irrigated area, surface water development should be in this area. Storage dams are a last resort.

It is true that MKA was not the only decision maker; they were contractors trying to satisfy the contractees' demands which were, at times technically and economically inexpedient. But the decision to build Kajakai Dam, to continue work on land development before adequate soil surveys were complete, the underestimation of gypsum deposits and the resulting dumps which occurred

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1/ Louis Dupree, Draft, p. 85

2/ Cadastral survey was really only begun in the late 1960's.

at various places underneath and beside the canals, among other decisions, were MKA's responsibility.

Over the 15-year period, the area under cultivation had increased, but production had not increased appreciably (see IRR analysis). In some areas, Nad-i-Ali, Marja, and Arghandab, waterlogging and salinity were having a negative effect on yields. The provision of an assured supply of water might have caused increased yields in years of major droughts (estimated at one year in seven), but that surely is a marginal benefit. Similarly, the damages of floods that occurred in 1957 and 1959 were partially alleviated because of the existent reservoir systems, even though water did flow over the dam spillways (primarily because of a lack of coordination between HVA and the Central Government in Kabul). But this is not too significant since the production saved must be compared with the added repair costs to large capital structures.

A generation of auto mechanics, machinists, truck drivers, bulldozer and crane operators, electricians, cooks and other specialists were similarly the legacy of MKA;1/ an exorbitant cost for a technical assistance program. Finally, to defend their major capital investments to 1960 on the grounds

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1/ A by-product of 15 years of American presence was the spread of the English language. Today many people, particularly in the Kandahar area, still remember the "Morrison-Knudsen Company." It was, in fact, the first major English language program in Afghanistan.

that it would have been more expensive to build the dams and canals in 1960 than in 1953 is a specious argument at best. What was true was that by 1960 two major capital investments (the Kajakai and Arghandab Dams) stood majestically in the desert, their stored waters used to no significant extent for irrigation nor electric power.

## 4. PROJECT DEVELOPMENT 1960-1971 - USAID BEGINS ACTIVE INVOLVEMENT

WITH THE DEPARTURE OF MORRISON-KNUDSEN THE POORLY PREPARED AFGHANS CARRIED FORWARD. LARGE SUMS AND ENERGY HAD BEEN INVESTED IN THE AREA AND THERE WAS A "DETERMINATION TO SUCCEED" BY BOTH THE AFGHANS AND THE U.S. UNNOTICED BY THE DEVELOPERS WAS THE GRADUAL SHIFT IN THE SCOPE AND DIRECTION OF THE PROJECT AND THE EMERGENCE OF NEW SOCIAL AND INSTITUTIONAL PROBLEMS.

1. INCREASED U. S. INVOLVEMENT
2. FIRST ECONOMIC ANALYSIS HINTS AT A WATER DISTRIBUTION PROBLEM
3. A SHIFT FROM STRICTLY TECHNICAL PROBLEMS TO SOCIAL AND INSTITUTIONAL PROBLEMS
4. THE SHAMALAN STUDY
5. THE CENTRAL ARGHANDAB STUDY
6. SUMMARY

## 1. INCREASED U. S. INVOLVEMENT:

Before MKA actually left the Valley it was anticipated that further land development work would be carried forward by the Afghan Construction Unit (ACU), 1/ the newly organized construction division of HVA. It was contemplated that the construction of laterals, secondary and farm drains, and land leveling, with the possible exception of some development of farms to be done by landowners, could be done by the ACU. The ACU with its own financial resources and with some grant-in-aid funds advanced by ICA, carried work forward to a limited extent. However, major problems affected its operations. Not enough trained Afghans existed to supervise the extensive irrigation system laid in place, equipment was poorly maintained, and as equipment wore out it was not replaced. ACU became less and less able to carry out construction activities. The RGA requested further assistance for the ACU, but ICA declined to provide further funds until, first, an adequate study could be made to determine a better strategy for project development, and second, the development of an adequate O&M program.

In 1959, a new commitment for American involvement in the H-A Valley was signed with the RGA. In 1960, the U. S. Bureau of Reclamation was contracted under a Participating Agency Service Agreement (PASA) to give HVA assistance on critical problems of drainage and maintenance and on the design and construction of irrigation systems. By the end of 1961 there were 13 BuRec technicians in Afghanistan.

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1/ In 1964 ACU was renamed Helmand-Arghandab Construction Unit (HACU)

The BuRec immediately involved itself with improving maintenance techniques. An example was the innovation in canal and lateral cleaning introduced to the ACU by the BuRec - to drag a chain between two "dozers", driven on either side of a canal, dredging the ubiquitous flora which grows rapidly and clogs the system. [1]

While the ACU and BuRec personnel tackled operations and maintenance problems, HVA continued the settling of new villagers in Marja, the second area on the terrace of the Boghra canal. The new settlers received from 4 to 6 hectares, 2 oxen per two families, agricultural implements, and 15 maund (Kandahar maund equals 4.4 kilos) of seed for the first year, all on the usual 20 year, no interest loan agreement, payments beginning after a 4 year period of grace. [2] The new village plans placed the huts adjacent to the fields, thus eliminating the distance to work - a problem of the Nad-i-Ali. Each village was to have 30-40 families and 11 new rural schools were planned to serve the whole Marja area.

Initially the new settlers at Marja gained excellent yields per hectare, particularly when compared to Nad-i-Ali, but the yields progressively decreased as a result of misuse of the irrigation water, lack of adequate drainage and other bad agricultural practices.

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1/ In the United States, chemicals are used to keep the canals free of these impediments - an impossible procedure in Afghanistan, where the water serves as drinking water for man and livestock, as well as for irrigation.

2/ As at Nad-i-Ali, nothing to date has been paid back on these loans. Louis Dupree, Draft, p 88-89

Settlement was also attempted in the Shamalan area. By 1961, 30 new families had been settled, but settlement problems were agravated by confrontations with an already settled traditional agricultural community. Similar problems arose in the Darweshan area below the Shamalan. The difficulties of moving new settlers into already settled areas was not anticipated. 1/

Not only was the BuRec involved in maintenance and operation assistance to HVA, but it began to play an instrumental role in planning. As a preliminary to further project development, the BuRec recommended an economic analysis of the area. (After 16 years there was still very little farm data pertaining to the Helmand Valley.) In 1963 HVA requested the BuRec's agricultural economist to develop an economic analysis of the Marja district for the purpose of determining the optimum of size of an economic farm unit for new settlers.

This Economic Analysis of the Marja Farm 2/ recommended that the farm sizes given to new settlers be increased to allow for agricultural surplus creation. The land that was being distributed yielded only subsistence living

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1/ "These areas (Shamalan) had about 50% of the agricultural land owned by absentee landlords. The local power elites regard the influx of new independent land owners as a threat, and although they hope to benefit from the additional water furnished by the dams, they resist the Government's attempt to collect land and water revenues." Louis Dupree, Draft, p. 92

2/ L. E. Stevens and K. Tarzi, Economic Analysis of Marja Farms, Helmand Valley Regional Development Project, Bureau of Reclamation, November 1964

which would not keep settlers on new lands. 1/ The study similarly suggested that land of lower quality (MKA Classifications IV and V) should not be used for regular crop farming. It suggested land classified as IV might be suitable for pasture-livestock or a forestry program; while land classified as V should, for the most part, be abandoned. The report was unique in providing the first farmer cost-income profile in the H-A Valley, a methodology later employed and expanded to estimate the cost-income profile of all the farmers in the Helmand Valley region.

The second report by the same author, known as the Tarzi-Stevens Study 2/ -

> . . . was undertaken to secure badly needed information on crop yields in the Helmand Valley . . . and factors affecting them; also to compare production now and before the dams and irrigation works were built. The data was obtained from interviews with 495 families and village chiefs, and from observation of farming practices throughout the Helmand Valley. 3/

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1/ "Some cynics believe some in the Government do not want the farmers in the Helmand Valley to develop into independent, commercial farmers, in order to maintain tighter economic and political control of the region. However, the articulated goals of the HAVA remain: to create a region of independent, landowning commercial farmers." Louis Dupree, Draft, p. 96-97

2/ I. M. Stevens/J. K. Tarzi, Economics of Agricultural Production in Helmand Valley, Afghanistan, Bureau of Reclamation, Denver, Colorado, 1965

3/ Ibid., p ix

## 2. ANALYSIS HINTS AT A WATER DISTRIBUTION PROBLEM.

The study was rather extensive in its qualitative analysis of problems encountered by farmers, but most observations were not substantiated by any quantitative analysis.

The obvious and known factors cited for low yields were:

a) Capital. Farmers who had insufficient capital received considerably lower yields than those with adequate capital supply.

b) Experience. Settlers without previous farming experience received substantially lower yields than settlers who had previous farming experience.

c) Domicile. Farmers who were living on their land were receiving substantially higher yields than farmers who were living in the villages.

Water or lack of water as a major constraint to increased production was not mentioned. What was said about water supply seemed contradictory; it was judged by farmers both as excessive and insufficient in the same regions. In the Kandahar and Shamalan areas, some farmers said that they had more water now, and were therefore more "happy and prosperous," while others in the Kandahar and Shamalan areas had less water now and were therefore "less happy and prosperous." 1/ This was the first published hint that a problem of water distribution existed. Although hinted at in the qualitative analysis, nowhere was the water distribution system mentioned as a constraint to increased production.

1/ Ibid., p. 37-38

the Arghandab River below the city of Lashkar Gah. The Arghandab River, the other major stream of the system, originates 250 kilometers northeast of its junction with the Helmand River in the mountains south of Ghazni. From the point where the Helmand and Arghandab Rivers join, the river continues its southwesterly course never to reach exterior drainage but to be absorbed in the marshes and sinks of the Chakhansur basin.

The general climate in the Helmand Valley region is hot and very arid, particularly at the lower elevations. Summers are hot and very dry, especially during June, July and August. In the lower section of the basin temperatures of about 52° centigrade have been reported. The winters are mild with average temperatures above freezing. However, minimum temperatures reach such levels as to make citrus and other subtropical crop production impractical.

The physical potential exists for agricultural production and the area is in many respects ideal for irrigated farming -- a regular flow of water is available from March-June of quality for irrigation; the slope of the land and the lay of the river terraces lend themselves ideally to land leveling and irrigation; a growing season of ten warm months; and, since the area is high, dry and far inland, water vapor in the atmosphere is low. Consequently, the daily period of ideal light intensity and climate for maximum plant growth is nearly twice as long as is found in other parts of Afghanistan. Whereas the physical environment is conducive to enormous production potential some adverse conditions exist, i.e., high water tables in some areas, lack of soil structure,

Those farmers who indicated production had improved since the dams were built cited, as the most important reason, that more water was available now, and, in some areas, that water was now also available late in the season, while those farmers who said that their yields were lower since the dams had been built gave various reasons depending on the area.

> Just below Arghandab, farmers complained that silt which had formerly enriched their lands during the flood season each year was now being trapped above the dam. In other sections, farmers said the cotton that they were now required to grow,[1] was taking fertility out of the soil. In some places the increased water supply was accentuating the salt, water table, drainage, and weed problem. [2]

Other problems that were mentioned were the extremely difficult credit situation and need for credit reform; the lack of management know-how; and lack of education and basic knowledge. "All of these can be solved with careful planning " and "hard work!" [3] What "careful planning" and "hard work" were necessary, was not elaborated.

As a major finding, the survey purportedly showed that larger farms yielded greater production and therefore larger farms with increased mechanization should be encouraged.

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1/ An RGA national program that required farmers to devote 25% of land under irrigation to cotton; abandoned in 1967.

2/ L. M. Stevens/K. Tarzi, Economics of Agricultural Production in Helmand Valley, Afghanistan, Bureau of Reclamation, Denver, Colorado, 1965, p. x

3/ Ibid., p. x

> The problems of low production can be overcome to some extent by larger acreages. Although the gross farm revenue in Darweshan is lower than in any other district, the large acreage per farm makes the total gross revenue per farm higher than in any other district - $423. The opposite is true of Arghandab where gross farm revenue per acre is highest - $27. The small acreage makes the total gross revenue per farm only a little over half as much as that found in Darweshan. 1/

It is not quite clear what the statement proves; obviously, other things being equal, the larger the farm, the greater the gross revenue per farm. The critical policy criterion, however, is the relationship between farm size and return per hectare; this is not provided by the study. Using the same partial data, 2/ it can be argued that since the average gross return per jerib in Darweesah is 340 afghanis and in Arghandab it is 804 afghanis with the former having larger farms, smaller farms should be a policy goal.

The Tarzi-Stevens Study tried to explain the externalities of large farms-

> Farms need to be of sufficient size and productivity to accomplish two goals - providing surpluses for urban development and improving of living standards on the farm. Increasing the size of the present subsistence farms and increasing their productivity are necessary to accomplish these goals.

Whereas, the objective of providing suplusses for urban development is a debatable point, that farms should be increased in size to achieve this end is not proved by the survey.

## 3. A SHIFT FROM STRICTLY TECHNICAL PROBLEMS TO SOCIAL AND INSTITUTIONAL PROBLEMS:

In the early 30's project movement was continually constrained by the
50's

1/ Ibid., p. x-xi

2/ Ibid., refer to Table l, p. 6, and Table X, p. 40

need to solve salinity in Nad-i-Ali and Marja which was absorbing a great portion of development funds and energy. The digging of drains in the Marja area had been hampered by contractors failing to fulfill their contracts. According to government regulations, small construction jobs had to be put out for bids to private contractors. The HAVA 1/ had been following this procedure and had let contracts for several drains. But as the contractors overshot their estimates, they stopped work and reneged on their contracts. The HAVA engineers knew at the time the contracts were signed that the work could not be done for the price bid by the contractors, but still allowed the contract to be negotiated. The HAVA Technical Department would have liked to hire laborers and do the job themselves, but were prohibited by government regulations from doing this. As a result, the work on the Marja project was progressing at a snail's pace, with slim prospects of ameliorating the situation. 2/

To drop the Nad-i-Ali and Marja project was from a policy point of view impossible; both the Afghans and USAID were "determined to succeed" -

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1/ Under a new charter with RGA, 1965, the Helmand Valley Authority (H V A) was extended to cover the Kandahar area, becoming the Helmand-Arghandab Valley Authority (HAVA)

2/ Ahmad Zia Morshidi/Richard F. Saunders, Development Project Evaluation Report Helm and-Arghandab Valley Authority, Ministry of Planning, November 1967

large sums had already been invested, and settlers had been brought from various parts of Afghanistan (unstated reasons to sink more money into drainage) - even though economic justification for further expenditures was doubtful. 1/ Further out-migration, particularly from Nad-i-Ali where large numbers had settled, would have been an embarrassment for both RGA and USAID.

The excessive involvement with the technical problems of the Nad-i-Ali and Marja areas (which did not comprise more than 12.5 percent of the total crop land) caused a myopia to other development problems in the region. A critic 2/ in 1961 found that although drainage was a major problem in the H-A Valley, it was by no means the only problem, nor even the principal problem. He regarded retarded agriculture and lack of proper operation and maintenance of the irrigation system to be primary problems in the area.

Unnoticed by the developers was the gradual shift in the scope and direction of the project and the emergence of new social and institutional problems.

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1/ Twice, in the Tudor Report (1955) and again in the Tarzi-Stevens Report (1964), it was recommended that Nad-i-Ali be made into a pasture land. (Our study confirmed that the Nad-i-Ali lands and conditions are so poor that people cannot hope to make a living from cropping this land. In lieu of large expenditures for drainage and development of Nad-i-Ali, it should be used for a pasture-livestock program. - Tudor Report, p xi) Although economically a sound proposition, the political and social realities of relocating the new settlers made the proposal unworkable.

2/ C. R. Maierhofer, Drainage and Related Problems of Irrigation in the Helmand Valley, Bureau of Reclamation, Denver, Colorado, April 1961, as quoted by Shamalan Unit, Feasibility Report, Helmand-Arghandab Valley Development Project, Bureau of Reclamation, September 1968, p 19

Find

When the project was first begun, there was a strong desire in the RGA to develop the publicly owned desert lands to provide opportunities for settling nomads and landless farmers. The project had provided water to lands in private ownership and already under irrigation, but that was incidental. The emphasis on development of public lands was clearly expressed in the "Rules of Procedure" adopted for HVA. The purposes of the organization were stated to be:

> Maintaining and operating the properties now owned by the Government of Afghanistan in and near the Helmand River drainage basin in the interest of national welfare and for the conservation and development and use of the nation's land and water resources, and for land reclamation and settlement and agricultural development . . . 1/

By the mid-1960's, the situation had completely changed. Apart from a few minor areas of public lands, most of the land that could be successfully developed was in private ownership. New policies had to be established for this new situation. Planning development on privately held land would entail finding solutions to the problems of existing land titles and water rights and the related problems of payment for water supplied.

With the changing nature of the project, and an increased involvement with improving water supplies to already settled landlords using traditional irrigation practices and structures, new legal and social problems arose. Whereas, the technical problems of irrigating flood plains are

1/ Tudor Report, p. 59

less complex than irrigating terrace lands, the social and legal implication of providing private landlords with an assured and greater supply of water demanded extensive study. (These social and legal problems which were becoming apparent in the 60's, were by the early 70's still a delicate subject in the underbelly of the H-A development, as will be explained in later sections.)

With time, the bureaucracy grew with the general administrative machinery becoming more cumbersome, and less able to handle the expanding project. O. Nervik and V. Noory [1] summarized the situation succinctly. In the early stages of the Helmand Valley project, they observed, the emphasis was on construction activities. Later, as serious salinity conditions developed in Nad-i-Ali and Marja, major effort was devoted to solving these. Under these conditions it is understandable that little time was left either for considering the removal of other constraints, nor the changing nature of the project and problems. For HAVA, which had begun as an agency to expedite the settlement program, had become by the mid-1960's an agency that coordinated utilities, education, agricultural research and extension, housing, health and industrial enterprizes. [2]

area dev.

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1/ V. A. Noory and O. Nervik, Report on Field Trip to Helmand Valley, Robert R. Nathan Associates/Afghanistan.

2/ Under a new charter, 1964, between HAVA/RGA, HAVA was given responsibility for industrial development.

As the responsibilities of the HAVA grew, the administrative problems were further aggravated by the involvement of three major decision making bodies in the project, the foreign sponsor represented by USAID, the RGA[1] and the regional Afghan development authority, the HAVA. The lines of communication and authority between the three often became blurred, and the project goals never quite became definite, with the result that-

> ........a number of programs and projects in the HAVA program still do not adequately reflect well defined objectives and goals. There is no agreed overall plan defining exactly the concrete results it is intended to gain, and how they are to be gotten. Needs may not be foreseen in sufficient time to plan and organize required programs effectively. Furthermore, administrators and technicians come and go, each new arrival, whether Afghan or American, having his own views as to what should be done. Lacking clear overall guidelines, past programs have suffered from lack of continuity.[2]

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1/ Here assumed to be not only the Central Government's policy planners, but various ministries: e.g., Ministry of the Interior and Ministry of Planning

2/ Raymond T. Moyer, Basic Assumption, Objectives, Immediate Goals and Required Action for an Agricultural Development Program in the Helmand-Arghandab Valley, A Draft Proposal for Review and Comment, January 6, 1968, p. 2-3. The lack of coordination between the RGA and HAVA may have been aggravated by some high government officials who believed that the project was a failure and that development funds would be better used if funneled to other areas, particularly the more heavily populated, more fertile Turkestani Plain in northern Afghanistan. But whether this was the reason, or because the administrative procedure imposed by the RGA on all agencies was at fault, is beyond the purview of this paper. (For more detail on general administrative problems encountered in agricultural development see R. Hughes, et al., Agricultural Sector Study, Asian Development Bank/Afghanistan, July 1971

Throughout the 1960's some observers became more vociferous in their warning that the project should not expand the area of land development, but rather should concentrate on area intensive improvements. In 1962 Benz and Holmgreen 1/ recommended concentration on the area under water command and avoidance of extending irrigation to new areas. R. H. Allen 2/ in 1963 similarly suggested a concentration of effort.

> It should not be assumed that once the water distribution and drainage systems are installed and the land leveled a highly productive agriculture will develop without further effort on the part of HVA. Many other elements are essential for such an intensive agricultural economy to develop. 3/

By 1965, critics saw little change or improvement in the H-A Valley approach. "About half of the area is still not adequately served because of lack of laterals and farm ditches and lack of control of turn-outs from the laterals. Only a few thousand jeribs are fully developed." 4/

As the controversy raged over the efficacy of extending the area to be introduced to mordern irrigation structures versus concentrating and resolving the problems of areas already developed, capital intensive development work was continuing in the Tarnak (in the Kandahar area) without any economic study or justification. Not only was some of the land of doubtful quality but two factors further complicated the matter.

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1/ J. S. Benz/F. N. Holmgreen, The Helmand Valley - An Overall Review, USAID/Afghanistan, November 1962

2/ R. H. Allen, Helmand Valley Development, Report R. Nathan Associates/Afghanistan, November 1963

3/ Ibid., p. 4

4/ Vakil A. Noory and Ottar Nervik, Report on Field Trip to Helmand Valley, Robert R. Nathan Associates/Afghanistan, January 1964.

1) In the Arghandab River basin the flow of the water in some years is not sufficient for irrigation of all the projected land development in North Arghandab, Central Arghandab and Tarnak areas. Detailed knowledge was necessary to pick the areas that showed the most potential since all couldn't be developed. By 1965 it had not been proven that Tarnak was the most promising candidate; rather, evidence hinted the opposite.

2) The provision of water to "new" water users in Tarnak, given a limited supply for "old" water users, would obviously result in conflict. Project planners had not considered this eventuality.

Similarly, land betterment work in Darweshan was in progress on a pilot basis. That Darweshan is downstream of Shamalan, logic would have dictated (given location closer to Lashkar Gah) that the latter should be developed first (other factors being equal).

4. THE SHAMALAN:

It was this "helter-skelter" irrigation development approach of the HACU in the early 60's that prompted the BuRec to add a feasibility planning team in 1964, and to select an area for immediate study and subsequent development. Selection was to be made on the principle that areas with potential for producing the greatest economic returns in the shortest period of time should be given first priority. After careful consideration of such salient factors as soils, remaining engineering and land development work, qualification of farm population, and economic returns that might be anticipated after land development, the Shamalan area was selected as the

first unit of the H-A Valley project for the BuRec's feasibility studies.

Shortly after the Shamalan area was selected, a demand arose for completed studies on a portion as soon as possible, so land could be available for developemnt by HACU when a proposed equipment loan became available. This loan was anticipated at an early date, and so the western portion of the Shamalan area was the one selected for concentrated effort. Even before the draft report 1/ was completed and with only aerial photographs for a mapping available, work was started on the West Shamalan. It was not until September 1968, with the final publication: Shamalan Report, 2/ that the overall plan for development of the Shamalan area finally became clear. It was proposed that a completely modern water distribution system be constructed in the area, to provide ample water at peak demands to all portions of the project. This was to include not only lands classified as irrigable (MKA Classification I-IV), but also lands classified as "6W" which are eliminated from the irrigable land class, but which have a history of irrigation and probably had prior water rights. The work entailed changes in the distribution and drainage systems as well as a major land preparation program, and constituted a substantial extension of the capital intensive

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1/ Draft Feasibility Report, West Shamalan Division, Shamalan Unit, Bureau of Reclamation/Afghanistan, December 1966. Later to be updated by Shamalan Unit: Feasibility Report, Helmand -Arghandab Valley Development Project, September 1968

2/ Shamalan Unit: Feasibility Report, Helmand-Arghandab Valley Development Project, Bureau of Reclamation, September 1968, p. 10 Prior to the completion of the report, HACU had not only begun work in the West Shamalan but had done some land development work at Zarest (the lower end of the Shamalan area). Some of the work has been ineffective as the areas have since proven to be unsuited for irrigated agriculture.

poor aeriation, high winds, and in large areas poor drainage of clay soils. 1/ These conditions all play an important role in defining the production limits of the area.

1/ H. Pillsbury, Afghanistan-The Greenhouse Nation, University of Wyoming-Kabul University, 1968.

approach. Engineers in the BuRec claimed that the failings of previous irrigation construction in the H-A Valley were that they were only partially complete. The Shamalan project proposed to give a complete package of a modern irrigation system.

The new distribution system would include an additional supply of water to the area from the Boghra canal via the use of Nad-i-Ali wasteway and through the rehabilitation of the Shamalan canal: construction of a new lateral diverting from the Shamalan canal to supply the "water short" West Shamalan; and the redesign and realignment of the remaining jui-[1] lateral and sublateral systems presently supplying water to the major land segments of the Shamalan area.

The drainage system would also have to be improved. Main outlet drains and subsequent lateral and field drains would be added to the present main drainage system to lower the high water tables in localized areas, and to insure proper future drainage of the project area when adequate irrigation water is supplied.

The major innovation would be in the land preparation scheme. The existing jui system would be completely eliminated, land cleared, leveled and organized and redistributed in large, uniform, smooth land plots. The water distribution system that existed in Shamalan, as in most of Afghanistan, consists of a convoluted network of juis which cut the lands into small

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[1] Ditch or minor irrigation system

irregular shaped tracts.

With project development accompanied by the adoption of mechanical farming and modern irrigation methods, establishment of a suitable irrigation system is necessary. This will require broad-scale leveling and grading to obtain fields of proper size, shape and gradient necessary to achieve a high degree of irrigation efficiency. The existing jui system would be removed by leveling and replaced with a modern, controlled distribution system.

The sequence of land preparation measures would be: clearing trees from the jui banks, 1/ leveling the jui system, and overall leveling or grading of the farm units to coincide with the construction of the new project irrigation system. Lands would be deep plowed or ripped as required. 2/

Also involved with the development program is the would-be development in Shamalan of a new source of potable domestic water supply, 3/ the construction of access roads to provide better transportation to market, and the provision of assured flood and erosion control in localized areas.

The decision to concentrate land development work in one area, coupled with a detailed time schedule and work program, went part way in satisfying critics' demand for an organized area specific plan. But for all their elaborate planning and economic feasibility study, the BuRec did not:

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1/ Faced with strong farmer resistance, BuRec planners now content that the trees can remain.

2/ Shamalan Unit: Feasibility Report, p. 127-128. The total cost of land leveling was estimated as being relatively low since a good proportion of the land leveling had already been accomplished by individual farmers to achieve a relatively high degree of efficiency of water use, using oxen power.

3/ The potable water system would be accomplished by sinking wells. This new drinking water system would not only cut the incidence of dysentery and other disease, but would be a contributing factor to increase O & M efficiency, because flora that line the canal walls could then be killed by chemicals. What has not been considered by the BuRec is the Afghan preference for running water over well water (origins stem from the Koran)

(i) prove that the method employed was the most efficient means of increasing agricultural suplus,

(ii) consider adequat ely the social implication of such a total alteration of the farmers; physical environment.

The Shamalan Study lists the constraints to increased production:

a) non-availability of farm credit,

b) continued use of oxen

c) a feudal farm sharecropper system,

d) fragmented holdings which conform to oxen-sharecropper, labor intensive farming,

e) rudimentary development of urban market and marketing surplus, which results in low prices for farm products and high prices for farm inputs,

f) low levels of education, sanitation and health,

g) a shortage of practical extension, demonstration training personnel and programs.

The reasons why these conditions persist, according to the BuRec, are because of "traditional attitude of the farmers, lack of incentives, and a scanty understanding of scientific principles of farming." To change these attitudes a " revolution in mental concepts" is needed. But just how this revolution was going to happen was not elaborated. The Shamalan project, as outlined in the report, would eliminate constraints (b), (d),

and partially (f) as a result of large consolidated farms, increased mechanization, feeder roads and potable water system.

Analysis:

The Shamalan Report, exhaustive as it is in technical details, is sparse in its analysis of the social implications of such a drastic and abrupt alteration of the farmers' environment. As early as 1967 a lack of concern for social problems was noticed.

> There remain a number of unresolved questions of a policy nature that will need to be dealt with before the project (Shamalan) can be implemented successfully. Yet to be worked out is the problem of how to handle the people of the Shamalan area who will have to be moved off their land while the land betterment work is being done; how to redistribute the land to the people after the job is completed, and whether or not to charge landowners for the improvements. Also, there will be the problem of providing farmers with the necessary production inputs including short-and medium-term credit if the benefits assumed in the Shamalan feasibility report are to be attained. 1/

5. THE CENTRAL ARGHANDAB:

Once the BuRec has completed its analysis of the Shamalan area, attention turned immediately to removing the physical constraints to improved agricultural production in the Kandahar area (the area irrigated by the Arghandab River). As early as 1965, problems in the Kandahar area were being reported.

> In some of the very rich orchard lands near Kandahar, North and Central Arghandab, serious waterlogging problems

1/ Ahmad Zia Morshidi/Richard F. Saunders, Development Project Evaluation Report - Helmand-Arghandab Valley Authority, November 1967, p. 4

have arisen along the canals from the Arghandab River below the Arghandab diversion dam. On those canals, intakes and canal banks have to be improved and water control should be installed. Unless steps are taken soon to remedy this situation, valuable orchard land may go out of production. 1/

With the completion of the Arghandab Dam and the South Canal 2/ the water supply to the Kandahar area was altered; whereas irrigation water was once seasonal, it was now made available almost continually. This in turn made good on-farm irrigation and agricultural practices more critical, and increased the amount of maintenance time required to keep the juis in fair operating condition. In some instances, irrigation practices did not change so as to use the increased water supply efficiently, and maintenance was neglected at times to the point of hindering the water supply. Gradually these conditions coupled with inadequate drainage began to raise the water table and have a net negative effect on area production.

In 1967 feasibility investigations were initiated by the BuRec on the Central Arghandab Unit, which were completed by 1970. The final report, The Central Arghandab Valley Unit, 3/ underlines the unfavorable conditions

1/ Ottar Nervik, Irrigation Development, Report R. Nathan Associates/ Afghanistan, August 1965, p. 27

2/ It will be recalled that the HACU between 1961-1965 constructed approximately 50 kilometers of laterals and 53 kilometers of drains, and leveled 300 hectares of land in the Tarnak area. But aside from the construction of the reservoir, the South and Tarnak canals and the minor land development in Tarnak, little else in the way of development took place in the Arghandab River Valley.

3/ Central Arghandab Valley Unit, Bureau of Reclamation, U.S. Department of the Interior, Afghanistan, December 1970.

that had resulted from an increased availability of irrigation water superimposed upon an inadequate and inequitable water control and distribution system, inefficient irrigation practices and inadequate drainage.

> At the present time, considerable portions of the Central Arghandab area are badly in need of drainage relief. Dating as far back as 1953, when some of the initial investigations were in progress, a few isolated areas were delineated as being marshy. Since completion of the Arghandab Dam in 1952, and the South Canal in 1955, these areas have become increasingly larger due to the increase in the divertible irrigation water supply. Interviews with various landowners in the area during the 1967-1969 period indicated that the visible effects of waterlogged land had accelerated over the past 5 years. During a 1964 interview, representatives of the Zakir village (situated in the southeastern part of the area) indicated that they had not particular damaging water table problems. However, a subsequent interview in October 1967 revealed the existence of numerous damaging water table problems both with respect to agricultural land as well as deteriorating effects on the buildings and homes in the village area itself. Today many other areas are similary affected by high groundwater levels. Numerous vineyards were destroyed; dead vines were removed and trenches filled in, in an attempt to grow grains when the production of grapes failed due to high water levels and increasing salinity and alkalinity.[1/]

This deterioration of thousands of hectares of land productivity has resulted in a 1970 cropland utilization only slightly in excess of the level that was prevalent prior to the completion of the Arghandab Reservoir and the South Canal.

The development plan for the Central Arghandab proposes to improve

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[1/] Ibid., p.138-139

and modernize the water distribution system, provide adequate drainage and develop a road network. The proposed plan provides for construction of main canals and principal laterals. The plan also proposes to combine several small laterals into a larger lateral to serve the area more efficiently.

> The proposed plan provides for main canals and principal laterals, but leaves the smaller laterals and farm distribution system as they exist, with such alterations as are necessary to join the old system with the new. The existing distribution systems in the vineyards and orchards are not to be changed, as excessive costs and administrative problems would be involved and the benefits to be gained would be very minor. 1/

Similarly a river diversion is planned to replace the existing 5 major and 2 minor diversions in the Panjwai area of the Central Arghandab. To solve the problem of a rising water table, the BuRec proposed 33 kilometers of drains to complete the drainage system work already begun by the HACU in the 1930's. Finally, a road network was proposed to link the project with the existing system of roads.

Most of the above activities, the BuRec concedes, are needed merely to restore agricultural production to what was attained during the first 5 years after completion of the Arghandab Reservoir and South Canal. Whereas the study arrives at a positive benefit/cost, it merely mentions certain constraints that have to be overcome if the project is to achieve its proposed increase in net regional production plans. Critical to the project's success in increasing production is the modernization and

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1/ Ibid., p. 162

improvement of the water distribution system. The study admits that this is essential to realize the proposed benefits but assumes that the small farmers will incur the extra costs of reorganizing and combining their small laterals. By what method they propose to induce farmers to make this added on-farms investment is not explained. Similarly there is little explanation of the method by which water rights are to be resolved once the new canals and laterals are completed.

Given that little is known about the present water distribution rights and methods along juis that have been in operation for hundreds of years, 1/ there is no reason to assume that the increased supply of water will be used voluntarily by farmers to effect an increase in net area production. An example will suffice to prove this point. If we assume that the distribution along a jui is by turn, with each farm being served in order of location along the jui so that when the water reaches a farmer he takes all that he wants for a specified unit of time before the next farmer is served, then all the added water supply may be absorbed by each farmer in turn, with no extra water to expand cropland, and possibly the man at the end of the lateral who complained about water prior to project construction will still face the same constraint after project completion.

The Central Arghandab report excludes consideration of the externalities

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1/ Many of the juis in the North Arghandab were built in 1777 as part of a public works program during the reign of Ahmad Shah.

of increasing water supply to one area upon the two other areas (North Arghandab and Tarnak) served by the same reservoir. There remain to date too many unknowns: the size of the reservoir in relation to maximum cropland potentially irrigable; the role of sedimentation and the resulting decreasing storage capacity of the reservoir; [1] and the present water needs as by canal and lateral to achieve maximum efficiency. That the Arghandab Dam dried up in 1971 was unexpected, confirming the opinions of those who have claimed that the dam is too small. [2] The dam's drying up gave the BuRec a chance to observe the rate of sedimentation, which was observed to be .8 percent per year with 15 percent capacity lost by 1971.

Prior to this -

> Sedimentation samples of reservoir inflows were taken in 1950 indicating an annual siltation rate of approximately 0.36 percent. A survey for the measurement of siltation in Arghandab Reservoir was conducted in 1962. The results of this survey, which were inconclusive, indicated that the storage had been reduced on the order of 7 percent as the result of siltation, or at a rate of approximately 0.7 percent annually. [3]

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[1] A new phenomenon recently disclosed is the pumping of water from the reservoir to irrigate lands above the project area. What impact this will have on the area's potential cropland below the reservoir is still unknown.

[2] It was never envisioned that the reservoir would dry up. A feasibility study by R. W. Beck (Electrical Power Survey Report Helmand-Arghandab Valley, Afghanistan, R. W. Beck & Associates, Afghanistan, 1964) concluded that the construction of a proposed electrification facility at Arghandab would be infeasible, even though the dam's construction specification had included an eventual hydroelectric facility.

[3] Ibid., Vol. 2, Part 3, p. 1-a, as quoted by Central Arghandab Valley Unit, p. 54

It is still speculation as to the direct impact of sedimentation on the life of the reservoir and the relationship between decreasing reservoir capacity and net irrigable hectarages. To date there is still no accurate estimate of water needs, given the inefficient water utilization within the Kandahar region, and so the decreasing reservoir capacity may or may not have a negative effect upon either the continued ability to irrigate the lands presently cultivated and/or the ability to irrigate the projected increase in hectarage.

Sensitive to the need to estimate the future life of the reservoirs, the U.S. Geological Survey in 1967 made a reconnaissance survey of the Kajakai reservoir to observe the extent of silting and determine the optimum method to be used for later detailed sediment studies which would be conducted at each reservoir. The study's 1/ results show that the "decrease in capacity at spillway elevation for the period 1953-1968 due to sediment deposition was 7.8 percent or 117,700 acre feet." 2/ But as with the Arghandab Dam, the total impact of this decrease in capacity is just not known.

Summary:

The Central Arghandab report can be criticized on the same grounds as the Shamalan Unit report and other reports issued since the beginning

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1/ Don Perking/J. K. Culbertson, Hydrographic and Sedimentation Survey of Kajakai Reservoir, Kabul 1968

2/ Ibid., p. 1

## 2. PRE-PROJECT AGRICULTURAL HISTORY (THROUGH 1946)

THERE IS EVIDENCE OF A LONG HISTORY OF EXTENSIVE AGRICULTURAL PRODUCTION IN THE AREA. BY THE 14TH CENTURY THE THRIVING FERTILE CIVILIZATION WAS REDUCED TO RUBBLE AND WILDERNESS BY PASSING INVADERS WHO DEPOPULATED THE COUNTRY FOR CENTURIES. FROM THE TURN OF THE CENTURY IMPRESSIVE IRRIGATION SCHEMES WERE ATTEMPTED TO BRING THE ONCE FERTILE AREA BACK INTO PRODUCTION.

of the project. The social and institutional constraints to effective project implementation are casually argued away.

> It appears that the best approach to the solution of the water right problem is to establish water rights for the land in the entire area, so that it may be resolved prior to, or in conjunction with, the implementation of the proposals included in this report. 1/

E.g., what exactly are the implications of non-establishment of water rights on the project's initiation is not discussed. Crisis periods can be expected to result directly from lack of consideation of the social and political constraints.

Aside from the major work in the Marja and Nad-i-Ali area, and some work in the Tarnak and Darweshan, it wasn't until the Shamalan project began that the major land development program became revitalized. When compared with the 1950's, the 1960's witnessed relatively lower expenditures on land improvements and a greater proportion of expenditure on urban development.

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1/ Central Arghandab Valley Unit, p. 8

## 1. AGRICULTURE

Prior to the development of the HAVA irrigation infrastructure about two decades ago, agriculture of the area was of a subsistence level. It was characterized by low yields and idle land. Even after the dams and canals were completed there lacked for years a core of trained Afghans, incentive, and production inputs to get agriculture moving. There was also a widespread absence of farmer knowledge of how to increase farm production. The situation started changing - slowly at first - approximately a decade ago. The change during the past decade can be partially attributed to AID and its predecessor agencies. Of primary importance was the training of Afghan agriculturists in the U.S. during the late 50's and early 60's. While training continues, this early program led to a core of trained Afghans in extension and research.

Wheat growing is the number one crop in the HAVA area. In the summer of 1973 about 40,000 hectares, nearly one half of the total wheat acreage of the entire area (including the areas that have not been under extension surveillance), are of the high yielding varieties. Some 14,500 metric tons of fertilizer were distributed for this crop. The wheat acreages in several project areas will range from 85% to 95% improved. This is a significant conversion to the growing of improved wheat when one considers that the first farmer demonstration plots were started in the fall of 1967.

The new technology of using improved seed and chemical fertilizer is

spreading to corn and cotton but at a slower rate. Some progressive farmers are applying fertilizer to fruit and vegetable crops.

With the advent of a year - round water supply, fruit tree and vine hectarage, particularly in the Kandahar area, increased and the new practice, for the HAVA area, of double cropping was ushered in.

Farmer incomes have increased, cultivable land is in great demand, and HAVA farmers are in a mood for change. A few highlights drawn from the 1970 Farm Economic Survey 1/ show trends:

- Over 50% of the wheat growers of the area used improved seed and fertilizer.
- In 5 years in the Helmand area, over 22% to 33% of the farms used some improved seed corn in 1969/70.
- Whereas 5 years ago fertilizer and improved seed were unknown and unaccepted techniques, initially most farmers today know and accept their use — subject to their availability.
- Use of tractors and tractor related implements has [illegible] grown from 1? tractors in 1964/65 to over 350 in 1971/72.
- Double cropping expanded two to three times in the period 1964/72 (although it still amounts to only about 13,500 hectares in 1971/72).

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1/ G. P. Owens, Farm Economic Survey

- In 1969/70, the average farm in 10 of 14 project areas was found to have sales exceeding 20% of the value of production. (For 6 project areas, sales exceeded 25% of the value of production, and in 2 fruit growing areas in Kandahar, sales exceeded 50% of the production value.)

a. Agricultural Staff

Extension: The extension staff is well trained in extension methods used to date in the Valley. Most of the staff have served in the Helmand area from 10 to 15 years. They know the area and are respected by the farmers but their effectiveness is affected by numbers. The extension organization is rounded off at about 290 positions. Of this number, about 90 are "civil service" and the rest work on a yearly contract basis. The latter group consists largely of laborers for nurseries and forest areas, for guards, drivers and warehousemen.

The hard core staff numbers about 75. Of this group 53 are in the field, responsible for extending information and teaching farmers. Currently there are 2 extension administrators and 4 subject matter specialists (in training) at the head office.

The extension organization stabilized at its present strength at least 5 years ago. Restricted budget allocations have prevented increasing the field staff during the past 2 years as planned.

The extension staff is competent in extension matters related to the Intensive Cereal Grain program. However, the present staff needs inservice training in the new technologies associated with crop diversification.

b. <u>Research and seed increase</u>

The HAVA research program has concentrated on the improved wheat and corn programs during the past 7 years. During this same period, some testing was done on cotton, guar, jute, and bennf, mung beans, peanuts, soybeans, sugar beets and sunflowers.

For several years prior to 1933, rather extensive variety tests were conducted on a wide range of vegetables and watermelons. Limited seed increase of selected items and some transfer of seed to farmers resulted from this testing effort and has continued to the present time. The effort showed the HAVA area to be ideally suited for the growing of a wide range of vegetables, both for food and seed crops.

The Research Division is headed by a Director General, currently having the additional responsibility of Acting Head of the HAVA Department of Agriculture and Rural Development. The Director General also has the responsibility for the Seed Increase and Farm Shop Sections of HAVA agricultural activity.

A recent survey of the staffing pattern falling under the Director General showed about 32 "civil service" positions and over 300 yearly

contract jobs. The latter are primarily employed as laborers on several large seed increase farms, the Bolan Research Station and 3 substations.

The Research Division has a good corps of research assistants, station managers, farm foremen, laborers who are skilled in their respective jobs. The Director General is the only member of the research staff, however, who had degree training in research methodology. Advisory assistance would be essential in order to pursue new directions in research activity. The research and seed increase physical plants and farms are considered good, the farm s being particularly well located with excellent provision for irrigation water.

c. Crop diversification

National demands for an intensive wheat program starting several years ago precluded expanded research and extension activity toward fruit and vegetable production, although progressive farmers have started on their own to diversify into fruit and vegetable crops. They have sought advice and it is apparent that many farmers are ready to apply improved pratices, as they have done in the cereal grains (and cotton in a limited way) to an array of other crops.

HAVA, assisted by American advisers, has taken limited steps during the past year that will lead into programs emphasizing diversification and high value crops. The trellising of grape vines and the pruning and spraying of fruit trees has been initiated on a small scale demonstration basis.

d. Animal husbandry

The HAVA Livestock Department was organized over 1? years ago to promote the improvement of cattle and sheep in the area. Little has been done with sheep. A good Brown Swiss dairy herd has been maintained at about the 50 milking cow level, built up from the original import of U.S. cattle from Heifers Project Incorporated.

Natural breeding programs in the villages, crossing Brown Swiss bulls with local cows, has proven the popularity of the "crossbred" animals, both for milk and for farm bullock purposes. During the past ? years an active artificial insemination program has gotten underway with Peace Corps Volunteer assistance.

USAID assistance during the past 4 years has been limited to advisory assistance in developing the land of the ?82 hectare HAVA dairy farm near Lashkar G h, limited commodity procurement and several participant grants.

e. Agricultural credit

The Helmand Arghandab Agricultural Finance Agency (A FA) was chartered in August 1970 as a fully owned subsidiary of the Agricultural Bank of Afghanistan. Its purpose is to develop an institution and to support agricultural development in the private farm sector.

AFA is still a fledgling organization and closed its first loan just 18 months ago. During its first year of operation, 1? tractor and implement

loans, 8 water pump, 350 corn fertilizer and 790 seed wheat loans were closed. Recently 20 additional tractor-implement loans were closed.

AFA and Extension worked closely during the past year organizing local "farmer associations" as a means of providing collective security for small production loans. By this means nearly 12,000 farmers were enrolled last fall in 275 associations for wheat fertilizer loans.

f. Problems

The HAVA agricultural program is presently in serious trouble for lack of transportation. The four-wheel vehicles (mostly pickups) and motorcycles that have served Extension and Research during the past 3 to 4 years are, for all practical purposes, worn out. Some vehicles are down because of inadequate maintenance and insufficient spare parts. The overall problem is aggravated because of the fact that replacement vehicles have not been provided.

During the past 6 or 7 years most of the vehicles have been supplied by USAID. The last new units provided, however, consisted of four-pickups secured during FY 68. HAVA has provided the required trucks and motorcycles and during the past 2 years has procured four small USSR vehicles.

## 2. WATER RESOURCES, ENGINEERING AND OTHER TECHNICAL CAPABILITIES

General:

Both HAVA and HACU have American university-educated personnel in the top management positions. These are capable men well qualified in their respective fields. The majority of the higher grade technicians and engineers are Kabul University or Afghanistan Technical Institute graduates, some of whom have had training in the U.S. or third countries. At present they are working on designs, surveying, and inspection for the Shamalan project, Babajee drainage, Darweshan and Lui Manda dikes, and the Chakhansur project. The technical competency of this group has been consistently improved through out-of-country and on-the-job-training. However, additional training and trainable personnel are required if the needed institutional capacity is to be obtained.

Attention has begun to focus on water use efficiency and some progress has been achieved. The problems of water use efficiency, as the farmers understand them, relate to inequitable distribution, too much water, not enough water, night irrigation, basins too small for tractor farming, fields needing leveling, and on-farm drainage. While a successful start has been made in a pilot area, overall improvement in the numerous projects with varying conditions will be a gradual process requiring concentrated effort and leadership by HAVA and farmer groups organized for a continuing co-operative activity.

Prior to construction of the present infrastructure, farmers in the Helmand and Arghandab Valleys received irrigation water on a "run of the river" basis. Crop yields were low (wheat 6 to 7 bushels per acre) due to lack of soil fertility, intermittent water supply, and poor farmer practices. (Some 70 to 75% of the land was left fallow each year.)

With the present infrastructure a reliable water supply can be furnished to the 360,000 acres presently under cultivation. In addition some 150,000 acres of land presently undeveloped can be brought under the water system. The climate, land and quality of water are all good and with proper water management, drainage and farming techniques will produce excellent yields.

The principal thrusts and accomplishments in past years have been in relation to the infrastructure. Land development, proper water distribution system management, on-farm irrigation practices, and operation and maintenance activities have not proceeded at a comparable pace. Consequently HAVA is at a point in time when, if the infrastructure investment is to properly pay off, and regression avoided, more attention must be directed toward these activities.

Shortage of funds and obsolete equipment have especially hampered the O&M Division in carrying out its responsibilities. Much of the heavy equipment is 20 years or older. Its lighter vehicular stock is also overage and not dependable. Spare parts and/or replacements have not been made available and consequently HAVA maintenance operations are inefficient

Archaeological research to date has touched only a fraction of the area. 1/ Extensive ruins cover stretches of the vast lower watershed, called the Chakhansur-Seistan basin, suggesting the existence of a properous and extencive agriculture society.

There is also evidence that many parts of the Helmand-Arghandab (H-A) Valley were extensively cultivated centuries ago, but with the exception of the area around Kandahar, much of the area in the Valley remained sparsely populated with a few farms scattered along the river valleys.

Many theories are given to explain the disappearance of this vast civilization but most historians argue that successive hoards of invaders from the north and the west destroyed the large cities and major irrigation canals. It is widely believed that the depredation first by Genghis Khan followed by Tamerlane resulted in such a loss of life and out-migration of the population from the area that the remaining inhabitants were unable to mobilize the manpower required to keep the irrigation system in operation. Others add that excessive forest utilization for fuel and brick firing resulted in the deterioration of the top soil. This combined with a possible long period of drought summarily wiped out the population or forced migration.

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1/ Traces of civilization have been found as early as the Bronze Age. Qala Bist, situated seven kilometers from the present day Lashkar Gah, is mentioned in ancient history along with the earliest city of Nineveh. While French archaeologists, exploring near Kandahar, have found ruins which they have dated back some 2500 to 3000 B.C., Sir Kerr Fraser-Tytler traces the history of the area from 500 B.C. in his book, Afghanistan, Oxford University Press, 1935

and relatively ineffectual. Heavy equipment availability during the past year is estimated at only 10 to 15% of total inventory. Canals and drains are not being adequately maintained and unless maintenance is stepped up and water control instituted, serious waterlogging and salinization can be expected as additional land comes into production and double cropping increases.

To stimulate the development of the Shamalan project a $4.6 million loan was granted to HACU (AID Loan #012) to provide for the rehabilitation of equipment mostly transferred to HACU on completion of the Kajakai Dam and for the purchase of new heavy equipment plus the related services required. Under the loan, HACU has hired an American office manager, field superintendent, master mechanic and three mechanics. By mid-1973 HACU will be adequately equipped and with the capability of constructing all irrigation and related works designed by HAVA. Table II gives a listing of equipment scheduled for rehabilitation and new equipment purchased.

3. CAPITAL RESOURCES

1 Kajakai and Arghandab Dams, the two dams described in earlier sections, were constructed primarily for flood control and storage of irrigation waters. Specifications for these are shown in Table III.

(i) Electric power:

Installation of two hydroelectric generating units is now underway

at Kajakai. The network is intended to serve power requirements of Kandahar, Lashkar Gah and intermediate communities.

Kandahar is presently supplied through two diesel electric generators of 1,562 kw each while Lashkar Gah is supplied by the hydroelectric plant on the Boghra canal at Girishk with a capacity of 3,000 kw. In addition there is a standby diesel electric plant at Lashkar Gah with a 1,000 kw capacity.

The power generated for the Kandahar area is totally inadequate and only the city area is served. Lashkar Gah with a much smaller population has adequate power except during the peak load periods of winter when sections of the city are cut off on a rotating basis.

(2) Water and irrigation system:

Construction of the two storage dams has allowed for a regulated flow and extended farm acreage. The extent of the irrigation system of canals, ditches, laterals, drains and related irrigation facilities is shown on Table IV. (Lateral roads necessary for maintenance and movement are also given as part of the project facilities operated and maintained by HAVA.)

(3) Transportation systems:

Development activities have resulted in expansion and development of other capital resources. The modern highway and improved roads connect this region with other regions of Afghanistan, Pakistan and Iran. A modern international airport at Kandahar offers great potential for transport of agriculture commodities to other parts of the world.

v The present key personnel in HAVA and HACU are given in Table V.

## 4. OTHER RESOURCES

### a) Helmand:

A full inventory of the social capital has not been taken, such as paved streets, movie houses, parks, postal service, telephone, telegraph, and the whole array of social services available to the people but the area is far ahead of the rest of the country and could serve as a basis for creating a model of regional development.

Educational facilities have improved and expanded partly with U.S. assistance. Within the HAVA there exist 13 village schools, 9 elementary schools, 1 junior high and 1 high school plus a preschool kindergarten. Some of the new schools are coeducational (unique in Afghanistan). Adult education vocational and technical programs are underway with a goal of expanding skills and attainment of near total literacy.

Under a public health program the U.S. provided Lashkar Gah with a modern 50 bed hospital which serves as the public health center for the entire region. In addition there are several basic health clinics in the outlying districts.

Lashkar Gah has been additionally provided with a piped supply of good water obtained from deep wells, and a modern sewage system. An industrial section has developed in the city with a cotton gin and oil mill plant and a marble factory operating as a government enterprise. A woodworking plant

manufactures household and office furniture. Indamer Industries are in the process of establishing a tractor and farm implement maintenance and repair facility.

b) Kandahar:

Expansion and improvement of the educational facilities in Kandahar and outlying villages in the area have been similar to those in Helmand Province. Kandahar has 2 high schools for boys and 1 for girls, plus an aeronautics training program for boys, a teacher training center, a technical training school and a cadastral survey school.

There are numerous fruit drying facilities in the Kandahar area, primarily for processing of raisins from the vast acreages of grape vineyards that abound in this area. Grain storage silos near Kandahar receive and store crop harvests and the city acts as the center for import and export of commodities for the entire region.

There is an ice plant in Kandahar that produces ice for local use plus shipping to Lashkar Gah and other cities in the region. A fuel storage depot just outside Kandahar stores and distributes imported fuels that are brought in from Iran, Pakistan and Russia. Several privately owned auto and truck repair shops operate in Kandahar plus motorcycle sales and repair facilities.

5. GOVERNMENT

a) HAVA/HACU administration:

An essential element in creating the institution to carry out development and regional coordination is a well developed and disciplined central organization. The 'organizational development' of the HAVA/HACU has been

plagued by many problems, many of them yet to be defined. Difficulties have arisen from 1) lack of consensus among central government administrators on critical components of philosophy and policy; 2) a lack of commitment to development or involvement and continuity among HAVA/HACU authorities; 3) the lack of a capacity to coordinate the various resources including foreign and U. S. institutions; and 4) a basic conflict of values, orientations and definitions of what needs to be done in development and how between HAVA/HACU and USAID officials.

b) <u>Revenues:</u>

At present the farmers pay only a token 'tax' for use of the infrastructure and no O&M or additional drainage construction charges.

The government revenues in the Helmand and Kandahar regions are egregiously low and unable to support regional government development expenditures. In 1349 (latest available data) for Helmand and HAVA combined revenue totalled approximately 34 million afs, or less than 34% of HAVA's budget for that year. Income tax amounted to 4% of total regional revenue, while real estate tax amounted to 20% of regional revenue. The major sources of regional revenue were the sale of mineral and agricultural products, which equalled 29%, while the collection of back revenues, repayment of advances, repayment of employee loans, refunds of overpayments, and miscellaneous non-revenue receipts equalled 21%. Whereas total revenue for combined Helmand and HAVA increased suddenly in 1349 after 3 years of fluctuating around 26.5 million afs,

most of the gain was from increased sale of mineral and agricultural products, while income and real estate taxes remained constant.

The range of farmer incomes in the Helmand and Arghandab Valleys is from some of the highest returns per hectare in the country to some of the lowest. Highest net income per farm is in Dund-Daman with 102,000 afs and lowest is Khanishin, 3,420 afs. The highest net income in Helmand Province is in the Girishk area at 40,397 afs. Net farm incomes are considerably higher in Kandahar than in Helmand, undoubtedly because much of Kandahar is an established fruit growing area, whereas large area of Helmand are devoted to the production of extensive field crops. Off-farm income in some areas is substantial, ranging from a low of 135 afs per farm per year in Khanishin to a high of 46,413 afs per farm per year. The latter is due primarily to large amounts of rental income from Kandahar property held by some farmers.1/

As a measure of the extent to which the farms are integrated into the monetary economy, farms in Dund-Daman had an average of 58% sales as a percent of the value of total farm production and Khanishin was lowest again at 10%. Nad-i-Ali, Marja, Shamalan, Darweshan and Girishk all ranged between 25 and 38%. 2/

No statistics on rural savings in the Kandahar and Helmand areas are yet available.

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1/ FES, Table 23, p. 50

2/ Ibid., Table 30, p. 61

## 1. PROPOSAL'S OBJECTIVES

### A. General:

HAVA has proposed a rather ambitious Fourth 5-Year Plan. The overall objectives quoted from the plan are as follows:

(a) Technical and economic research and investigations with the purpose of benefiting from the natural resources in this area.

(b) Improvement of the productivity of the producers and the raising of production per unit of land.

(c) Elevation of food production standards, especially in wheat, in order to meet the needs of this area and other parts of the country.

(d) Improving the present irrigation system and building new irrigation and drainage facilities and constructing flood control facilities.

(e) Research reproduction and improvement of animal husbandry for prevention of disease, in order to increase the income of farmers and cattlemen in this area.

(f) Elevation of agricultural production for export and for in-country use, particularly in cotton.

(g) Reclamation of more land for the settlement of people now without land.

(h) Raising the educational standards of people in the area.

(i) Improvement of health programs for prevention of disease and raising the standard of health.

(1) Expansion and development of the industries located in this area utilizing electric energy and more exploitation of the natural mineral resources such as Rikham ( a type of high quality marble) thus providing work and eliminating unemployment and encouraging local handicrafts based on the agricultural and mineral production of this Valley.

Most Afghan and foreign officials who have been close to the scene agree that substantial progress has been achieved and that a significant impact on total agricultural production is now possible. Hence they reason meaningful returns on the large capital investments made on the Valley irrigation infrastructure over the past two decades now, for the first time, may be "in sight."

B. <u>Agriculture:</u>

HAVA Agriculture has developed its fourth Five-Year -Plan strategy with the idea of accelerating yields and the production momentum achieved during the past 4-5 years through the cereal grain program. It plans to extend its extension program to all project areas and to influence increasing numbers of farmers. The HAVA plan, in essence, is to build upon present activities while "gearing up" to emphasize other important areas of production and the new opportunities for farmers resulting from tractor power, additional fertilizer and other production inputs that are becoming available.

Thus HAVA plans to continue the cereal grain programs and associated

activities for 2-3 years in outlying areas that have received little or no assistance to date. The plan emphasizes cotton production, particularly in relation to increasing yields. Increased double cropping with emphasis on second crop alternatives is to be promoted. HAVA plans to continue its livestock program (but with no significant assistance from USAID).

The important new activity in HAVA's plan involves diversification and the promotion of high value crops, some of which will fall in the foreign exchange earning category. Applying the commonly used improved practices employed in other countries to the already existing hectarages of pomegranates and vineyards will be the starting point. With respect to vegetables, there is much room for yield improvement as well as the introduction of more kinds, both for local markets and the large market centers of Kandahar and Kabul.

Other activities that have recently been inaugurated in the HAVA and planned for prominent positions in programming priorities include farm mechanization, on-farm water management and agricultural credit.

HAVA considers that the best way to induce its farmers to adopt improved agricultural practices on a sustained and expanding basis is through its extension service. Extension programs are to be operating in all project areas by 1975. Extension "strength" is to be built up to about 100 field agents by 1978 or 1979. The extension plan is not only of expansion in numbers but call for upgrading, training and reorienting its program to the new opportunities for farmers in the Helmand area.

The Director General for Research considers that a sensible approach for meeting the wide ranging future research need in the HAVA area is to "tie in" with the Afghanistan Agricultural Research Program, currently being considered by the RGA and USAID/A. The apparent value of this plan would be the sharing in the HAVA area of the considerable resources and research capabilities of the national organization.

C. HAVA's detailed proposals for the Fourth 5-Year Plan in the Project Development, Operations and Maintenance, and Engineering and Construction areas are as follows:

1. Project Development:

HAVA proposes to expend some afs 88,700 plus $916,000 from out-of-country sources (presumably grant or loan funds) on the preparation of feasibility reports which include: Two diversion dams on the Helmand and Musa Qala Rivers; soil and water studies on some 95,000 hectares of land in the Helmand, Kandahar and Chakhansur area plus flood control studies in the lower Helmand and Chakhansur.

2. Operations and Maintenance:

HAVA has programmed afs 100,000,000 and $800,000 for operating and maintaining present facilities and the additional structures to be constructed during the 4th Plan period. The dollar expenditures would be from out-of-country sources principally for spare parts and new equipment.

3. Engineering and Construction:

The HAVA has planned an ambitious engineering and construction

Whatever the reason, what was once supposedly the "bread basket" of Central Asia was by the 20th century vast barren or scantily vegetated lands affected to varying degrees by salts, alkaline, groundwater and erosion.

Work on restoring and rehabilitating the H-A Valley prior to the 20th century, although certainly attempted, is not anywhere recorded. It is with the dawn of the 20th century that the earliest attempts at restoring the irrigation systems is recorded. 1/ Between 1910 and 1914, the Afghans began to develop parts of an old canal system in the Helmand Valley around the Seraj. During this period, Governor Osman of Kandahar, inspired perhaps by the tales of the ancient "Sughra Canal" in the Seraj, just below the mouth of Musa Kala. The canal extended southwards and eventually some of its branches reached the Arghandab above Qala Bist (see map).

In the 1930's the Germans and later the Japanese, under contract with the RGA, gave technical assistance and actually helped in the construction of new canals. In 1930 German engineers repaired the Seraj canal and installed a siphon near the intake. Mohammad Zahir Shah, the present King, had three jetties built in 1941 to protect the Seraj intake. Late in the 1930's an attempt was made to extend the canal development. The RGA called in a team of Japanese engineers to improve the old Deh Adam Khan canal 2/ which had been

1/ Information prior to 1946 from A.A. Michels, The Kabul, Kunduz, and Helmand Valleys and the National Economy of Afghanistan, Washington, D. C., p. 48 and Louis Dupree, Afghanistan - Paleolithic to Modern Time, (draft), Princeton, 1971, Chapter IV, p. 76

2/ In the vicinity of the present Boghra Canal (see map).

program for the Plan period. It estimates expenditures of afs 488,575,000 and $5,540,000 for these undertakings which include: Continuation of the Shamalan project, construction of drains, rehabilitation of the Seraj canal, and construction of the diversion dams on the Helmand and Musa Qala Rivers and in the Chakhansur. A feasibility study has been completed for construction of gates on the Kajakai Dam with cost estimates at afs 85,000,000 not including dollar cost of 1,200,000.

## 2. ANALYSIS

### A. Administrative:

The attainment of project goals of HAVA's Five-Year Plan is contingent upon solving a whole range of problems. To meet the necessary and sufficient conditions for optimum development HAVA must address itself to (1) optimum mobilization of resources, (2) optimum allocation of resources, (3) optimum efficiency in implementation, and (4) optimum efficiency in use of resources in place. HAVA, of course, has fallen down badly on all four of these tasks. Indeed, it can be argued that failures in (2), (3) and (4) are as bad or worse than failure in (1). It is common knowledge that the Helmand-Arghandab Valley project has been expensive, as well as manifest of a general imbalance as between infrastructural and directly productive expenditures.

The deficiencies in implementation and utilization are perhaps more egregious than those in mobilization and allocation. There are leakages in both ordinary and development budget expenditures, which may range from 10-15% of the HAVA budget. There is considerable evidence that part of the

development budget is drained off into non-development purposes. There are also losses due to negligence and inefficiency.

This general deficiency in implementation is matched by deficiencies in utilization. The present infrastructure in the Helmand - Arghandab Valley is still grossly underutilized.

If deficiencies in allocation, implementation and utilization had not existed, indicates that perhaps between 3-4 times the output from past development expenditures could have actually been realized. If this assumption is correct, and if these deficiencies are still existent, then emphasis on revenue should be on par with other sectors. The concentration in the HAVA project design is on generating sufficient revenue support from the RGA. Indeed, the undue emphasis by HAVA on the lack of the necessary budget clouds the issue. "If we only had the necessary development budget we could achieve results (a). (b). (c). (d). etc." This is a rather myopic view of the problem. Indeed, knowledge of the other deficiencies in the Helmand-Arghandab Valley appears to have an effect on opposition in the Jirga to increase revenues to the Valley. The question is raised, "Why should Parliament vote more revenues when there is such poor use of the revenues already at the disposal of HAVA?" In political terms the conflict is between the bureaucracy and officials on one side who want greater revenues, and vested interests in the Parliament, that is, the landlord class who want to hold onto what they have.

The real problem has been the lack of a willingness to demand ✓ expenditure performance or accountability. There will always be a shortage of financial resources as long as projects are never completed, as long as the administration of the ordinary budget is mismanaged, and as long as the ordinary budget expenditures are directionless. More emphasis has to be placed on expenditure performance. Without performance, additional revenues leading to an increase in the same kind of expenditures will do very little for the development of the Helmand-Arghandab Valley.

As long as the efficiency of the public administration is not increased, there is little chance for a fundamental improvement in the region's performance. If the projects, for their effective implementation, demand an enormous input by HAVA, and HAVA does not change its performance, there is little chance for the attainment of these objectives. What is necessary is to look for development projects that will be (a) quick yielding, and (b) given the present prevailing conditions have a high probability of being enforced.

B. Budget:

The possibility of HAVA receiving from the RGA the necessary increase in budget for expenditures projected over the next five years is very slight. The present national budgetary deficit with balance of payments problems and inadequate growth in domestic revenues makes the possibility of increasing developmental expenditures over the next five years marginal. With national ordinary expenditures growing at such a quick rate, the RGA

for the next five years may have only resources for ordinary expenditures with little left over for developmental expenditures. For the past five years allotments to the HAVA have been about 100,000,000 afs/year. This seems to have been allocated as regional allotment rather than complying with any specific or delineated project investment plan - that is, Nangahar area received approximately 100,000,000 afs and the Paktia project similarly received an allotment of the same size. To expect any budget considerably larger than 100,000,000 afs would presuppose dramatic changes at the national level in budgeting and planning and access to development resources. (For further elucidation see RNA Final Report.)

C. <u>HAVA's difficulty in effecting change:</u>

In the final analysis it is the impact upon farmers and their resulting increase in yields and revenue that is the measure of the effectiveness of an agricultural development project. HAVA as a development institution has not engendered the confidence and trust of the farmers. Section IV below gives an assessment in detail of the farmers' attitudes.

D. <u>SUMMARY:</u>

The concept in the Fourth Plan of seeking immediate changes through the existing institutions is questionable since (1) HAVA is not administratively capable of doing it; (2) there are not sufficient national development resources (RGA) to effect the implementation of all project proposals; (3) it is questionable how much the target group would accept innovations imposed upon them by an institution in which they have little confidence.

E. Investment analysis:

In 1973 two independent studies assessed the present situation in Helmand and Arghandab Valleys and evaluated HAVA's development plans.

In the Helmand-Arghandab Valley Project - An Evaluation and Feasibility Analysis, 1/ conclusions are that the project's internal rate of return (IRR) on projected investments by HAVA for the next 10 years is not much greaters than zero: i.e., the projected investment package is at best marginally feasible. In a sensitivity analysis (Table VIII) *correlating assumptions of length of project life, investment cost, projected growth in agricultural production as a result of project investments, and assumptions of regional growth in agricultural production if there were to be no regional development investments, is attempted. At the "optimum optimorem" the IRR is 12.4 percent; but by merely adjusting the projected regional gains slightly downward or assuming the project has less than 50 years on the present infrastructure (which is now greater than 20 years old) or assuming that the area will not merely stagnate if there are no future investments, the IRR rapidly approaches zero.

The project to date has shown that there is a positive

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1/ Lloyd Baron, The Helmand - Arghandab Valley Project - An Evaluation and Feasibility Analysis, (draft), Kabul, June 1, 1973

* Table VIII - Helmand Arghandab Valley Project Investment Feasibility Analysis - Percentage Annual Return on Investment Sensitivity Analysis

benefit in reclaiming the desert land (but not necessarily a positive benefit/cost relationship) but has yet to prove that by merely grafting a more modern irrigation system on traditional farmed and irrigated lands will necessarily lead to increased gross production value for the region. 1/

The study observes that -

1) While verbal attention, and some effort, is now being turned to the methods of removing a broad range of constraints to transition from a traditional agricultural society, investments to the end of the project life are still concentrated into a capital intensive, area - extensive mix.

2) While four major project studies are planned, they are all engineering in nature, and partially area -extensive in their biases.

3) The removal of the water constraint which has, since the inception of the project, been proved to be fraught with technical complexities and uncertainties is still, after 35 years of project development, absorbing much of the project planners' energies and investment in solving much the same problems, i.e., the redesign, realignment, reconstruction and improvement of canals, laterals and drains still continues into the future while two added technical unknowns are added to the matrix.

a) Will the manpower and resource capabilities of O&M be sufficient to keep the present and projected irrigation systems in optimum operation ?

b) What role will the loss of the reservoir's capacity

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1/ Ibid., (Draft), [illegible] Study – Introduction

play on the effective life of the irrigation infrastructure?

4) There is serious doubt whether the RGA could support such an ambitious development scheme. Present RGA commitment ranges about 100 million afs/year. This proposal would require up to a 300 percent budget increase over the next 8 years. Given the national revenue problems, it seems unlikely that the HAVA development budget could be supported without dramatic national institutional reform or intensive regional revenue generation. Although the latter is referred to, no effective legal framework and timetable is specified for implementation of water uses, tax and/or O&M operations levies.

5) No critical path is delineated; i.e., what if HAVA's proposed budget is cut by 10%, 20%, 50% or 75%? What specific projects would be abandoned, curtailed or postponed? If the history of the Valley teaches us anything, it is that given the heavy involvement with land development, and its relatively simpler implementation (i.e., it is easier to build canals than reorganize administrative and farmer institutions), budgetary cuts will result in the program following the line of least resistance - i.e., the operational budgets for agricultural and institutional sectors will suffer most.

The recent HAVA Audit Report [1] of October 1972 summarizes the accomplishments to date, the problems extant, and gives five recommendations.

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[1] Battle Hales' Audit Report - Comprehensive Review of U. S. Assistance in the Helmand-Arghandab Valley Region, October 31, 1972

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for the HAVA Five-Year Plan which had been either neglected or supplied inadequate emphasis. In a summary of accomplishments the report notes that technical assisted programs, and not the capital investments have accounted for recent regional production gains.

> . . .. Due to a combination of fortuitous circumstances and limited but effective USAID agricultural technical assistance and some improvement in drainage systems during the past five years there has been a tremendous increase in crop production and improvement in the farm and regional economy.
>
> Agricultural credit, combined with a sizeable increase in mechanized farming, has encouraged double cropping and improved cultural practices. The farmers have also been able to buy increasing quantities of fertilizer to meet their needs . . .
>
> Due to success of the agricultural technical assistance program and an improved economic position, farmers have become more innovative and willing to try new methods. At this point, some farmers now appear to be ahead of HAVA and RGA officials in their willingness to assume obligations for improvements which directly benefit them.[1]

In a summary of problems, the author notes that it is the technical problems of a capital intensive irrigation system, and the administrative inefficiencies of HAVA that still plague the project's effective implementation.

> The Shamalan land development project is not proceeding according to schedule, and supplemental financing could be required to complete the project according to the initial concept if delays are not overcome. The new Shamalan canal will be completed and area problems will be multiplied unless HAVA, AID and

[1] Ibid., p. 12

BuRec take prompt action to assure that land development proceeds at the same pace.

HAVA and HACU have good organizational structures but lack of good management practices and administrative procedures have made the organizations relatively ineffectual.

HAVA and HACU have not developed equipment maintenance capability without continued U.S. technical assistance and foreign exchange for commodities, nor do they have sufficient capacity in engineering.

Although some progress has been made, information and statistics in all areas are deficient. Aerial photography planned for the Spring of 1973 is expected to provide some reliable statistics and information of farming patterns. but the Mission should consider furnishing direct technical assistance to achieve the total statistics which are urgently needed for intelligent application of further U.S. programs in the Valley.

Operations and maintenance of canals, laterals and drains has been seriously behind schedule except for limited but impressive drainage improvement achieved under the Food for Work program. Main drains and some laterals are choked with weeds and silting.

HAVA and HACU remain heavily dependent on U.S. assistance with lack of effective effort made to become self-sufficient.

HAVA does not intend to institute charges for services, except in the future for land in the Shamalan after it becomes fully developed. Due to slow progress on land development, implementation of this policy will not improve the HAVA financial position within the foreseeable future.

An export market for the region's produce has not been adequately exploited. 1/

The five recommendations given are:

1/ Ibid., p. 13

1. . . . continued American presence and technical assistance; USAID should stimulate the RGA, HAVA and farmer beneficiaries to establish and carry out capital improvements on a self-supporting basis. 1/

2. It is recommended that USAID/A, in agreement with HAVA, propose to AID/W the establishment of a program to provide a contract team, or other appropriate means, to train HAVA and HACU executive, middle and lower level managers in management techniques and decision making. 2/

To accomplish an overall development plan with clearly defined physical goals the report recommends -

3. That USAID/A propose to AID/W that formal recognition be given to the high cost and long-range nature of any large reclamation and irrigation project and this project in particular, and the necessity for continued technical assistance to fulfill the humanitarian needs and assure success of the heavy U.S. investments in effort, money and reputation. Based on this policy, that interim AID goals and planning be established within the framework of the Five-Year Plans of HAVA, HACU and the RGA. 3/

If future USAID loans are to be a benefit to the RGA, then they must bear a direct relationship to an immediate increase in foreign exchange income.

4. That USAID/A provide in future project proposals that as a condition to further U. S. capital assistance in connection with the irrigation system in HAVR, HAVA must make substantial concrete progress in the establishment of an overall realistic system of charges for services in connection with delivery of water and for operations and maintenance, and establish an effective system of water control. 4/

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1/ Ibid., Recommendation No. 1, p. 26
2/ Ibid., Recommendation No. 2, p. 29
3/ Ibid., Recommendation No. 3, p. 50
4/ Ibid., Recommendation No. 4, p. 51

functioning for some 200 years. The canal began above Girishk and irrigated the lands on the eastern bank of the Helmand as far as the water could reach. The Japanese planned to enlarge the canal and change its alignment in order to increase the area which it could irrigate. World War II interrupted this program after only some 15 kilometers of new canal having been dug, using hand methods.

In 1942, a joint British-Russian ultimatum forced the Japanese and the Germans, along with other Axis personnel, to cease work and leave the country. After their departure the Afghans continued the work under the direction of Mr. S. W. Shah (a Cornell trained engineer) who had completed 25.7 kilometers by the year 1946. Mr. Shah not only continued the work, but changed the plans. He relocated the proposed intake structure to its present position above Girishk and rerouted the canal onto higher land, preferring to cut and blast through the hard conglomerate of the terrace rather than to fill the flood plain as the Japanese had done. The problems which arose from having to fill in soils containing highly permeable gypsum phases not only changed the course of the canal but initiated the need for heavy equipment unavailable in Afghanistan.

By 1946 the scope of the proposed irrigation works had also enlarged substantially. The RGA intended not only to irrigate the flood plain below Girishk but the Nad-i-Ali and Marja tracts on the terraces or benches to the southwest (see map). This involved enlarging, partially rerouting and bifurcating what

Finally, the development plan must make a sharp distinction between U.S. capital assistance for the irrigation system and that for technical assistance in the fields of agricultural production and marketing, particularly as the assistance relates to horticultural products such as fruits and other exportable items.

It is recommended that -

> 5. . . . an increased AID technical assistance, commodities and training program be continued with emphasis on increasing agricultural productivity despite the problems of an imperfect irrigation system. U.S. agricultural technical assistance where feasible, and part of the engineering services required to increase agricultural productivity under existing circumstances, should be provided through a contract team of specialists . . . 1/

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1/ Ibit., Recommendation No. 5, p. 53

## 1. SUMMARY OF REPORTS ON AFGHANISTAN'S DEVELOPMENT

The literature on agricultural development in Afghanistan is replete with the errors of past investment programs and consistent in what is needed now to remove the constraints to agricultural surplus creation.

a. In Current Economic Position and Prospects of Afghanistan,[1] the general observations are that (1) because there has been an overemphasis in the past on infrastructure investments and on large-scale, slow maturing projects, what is needed now is investment in a series of short-term and quick-yielding projects; (2) the government agencies lack the technical capabilities to identify such projects; (3) programs are necessary that ensure an effective channel of communication with farmers to ensure that they receive the guidance they need in changing the current farm practices. Among the impediments to growth are -

(a) inadequate supply and distribution of farm requisites, e.g., fertilizers;

(b) shortage of water and imperfect irrigation systems resulting each year in a high proportion of fallow land;

(c) inadequacies in the extension services, combined with a failure to communicate effectively with farmers;

(d) failure to develop a strategy for development and undue emphasis on large-scale, long-term projects in successive Five-Year Plans;

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1/ Current Economic Position and Prospects of Afghanistan, Volume III, Development Prospects in the Agricultural Sector, International Bank for Reconstruction and Development and International Development Association, November 9, 1971.

(e) Failure of Government to give adequate recognition in the past to the importance of the livestock sector;

(f) high cost of credit;

(g) system of sharecropping in which the landowner has little or no obligation to the tenant; fragmentation of holdings;

(h) Government pricing policies which discourage higher production; and

(i) failure to develop cooperative associations. 1/

The list is not exhaustive but illustrative of the circumstances that combine to impede the expansion of production by the Afghan farmer.

The IBRD assesses the present capabilities in agricultural education extension training and inservice training as "seriously deficient." 2/These deficiencies need to be reviewed and programs introduced for upgrading the system at all levels. The Government must also be urged to introduce legislation to expedite the removal of constraints on production and provide a necessary legal basis which is consistent with development needs.

> Legislative actions are needed to improve landlord-tenant relations, as a first step in a more comprehensive reform of the land tenure system, to establish cooperatives, to regulate water rights, to provide chattel mortgage, etc. 3/

Finally, in reference to the large-scale irrigation schemes, the IBRD

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1/Ibid, , Summary and Conclusions, p. -i-

2/ Ibid., p. -ii-

3/Ibid., p. -iii-

feels that the time is now ripe for a major effort to intensify production on lands already under production even at the cost of delaying capital projects such as extending the area of improved cropland through the construction of expensive new canals and other irrigation systems.

> The return from intensive production drive in existing irrigated areas would almost certainly come earlier than from an entirely new irrigation scheme though, in the long-term interest of Afghanistan, both may be needed. The success of the Paktia Development Authority 1/ stems in part, at least, from its concentration of effort on sound advice at the farm level and the provision of the services needed to back up that advice. In other words, its aims have been eminently practical, not grandiose, and it is not without significance that some ministers, and some of their advisers, now regard the Paktia approach to development as the model to be reproduced in other regions. 2/

b. In the <u>Agricultural Sector Planning Study</u> 3/ the ADB notes the need for reorientation of irrigation and land development programs by shifting emphasis to high, quick pay-off projects. Resources for rehabilitation and improvement of existing irrigation systems should be increased and large projects already under construction should be continued but new such projects should be delayed. What is of urgent need is a basic survey to determine <u>water balance conditions</u> prevailing for both surface and groundwater resources.

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1/ A project of the Federal Republic of Germany

2/ Ibid., p. 9

3/ Asian Development Bank, Agricultural Sector Planning Study, Kabul 1971; reviewed by Raymond W. Hooker (USAID/A Program Economist) in "ADB Study Recommendations and the USAID Program" memo to A. Reich, December 1972.

This has priority over irrigation construction work.

What is needed now is a concentration on on-farm improvements and communication with the farmers. There is a need to concentrate on increasing access to farmers by enlarging field staff, improving mobility, modernizing demonstration capacity, and increasing farmers' confidence in extension in general. 1/

A fruit yield improvement program ranks highest among the post-grain self-sufficiency programs. The study notes that fruits are efficient converters of fertilizer, giving high yield and having a high potential for export earnings and therefore of great effect on national income.

The PACCA program 2/ demonstrates large potential for yield and quality improvement of grapes and raisins. Such a program should be applied more widely. With improved inputs of fertilizer, insecticides and fungicides and cultural practices increases in acreage would, however, soon glut traditional markets (India, Pakistan). Therefore it would be necessary to develop new export markets.

To exploit the export potential of fruits quality improvement and control are needed for increased export earnings. The success of promotional

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1/ Ibid., p. 40

2/ A UN FAO development project that has also been instrumental in creating the first credit cooperatives and forcing the necessary legislation for the first national cooperative law.

activities abroad, especially Western markets, depends heavily on the ability to offer a dependable supply of products of consistently high quality. More export market development programs are needed to increase and standardize quality for raisins and other dried fruit. Improved foreign market intelligence could increase export earnings.

The vehicle to achieve this surplus generation in the agricultural sector would be the establishment of area development authorities in the more important farming areas. These authorities would be responsible for operating integrated programs of irrigation system maintenance and small-scale rehabilitation, fertilizer and crop production practices, marketing procedures, new concepts of livestock breeding, etc.

c. In the Final Report: Economic Advisory Services Provided to the Ministry of Planning, RGA, 1/ the report stresses that the agricultural sector is the area to be given highest priority. The strategy of agricultural development should include a phased program that emphasizes:

1. The adoption of fertilizer and improved seeds (especially for wheat and cotton) on all existing irrigated land;
2. The improvement of on-farming irrigation systems;

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1/Robert R. Nathan Associates, Inc. Final Report: Economic Advisory Services Provided to the Ministry of Planning, RGA, Washington, D. C. July 1972, reviewed by R. Hooker (USAID/A Program Economist). "The USAID Program and the Recommendations in the RRA Final Report," memo to A. Reich, Kabul, November 1972

3. The adoption of double cropping and improved cultural practices;

4. The introduction and adoption of higher value crops and new varieties;

5. The construction of storage and distribution systems with priority to small-scale and quicker-yielding local projects;

6. The improvement of marketing facilities and practices which should receive special emphasis at all phases;

7. The design of an agricultural research program to support the strategy at each stage and to anticipate the move from phase to phase.

That self-sufficiency in wheat is imminent, production and marketing programs should be designed to maximize the flow of products to export markets.

Priorities in irrigation should be focused, for at least the next five years on:

1. Utilizing to the maximum existing storage and distribution systems;

2. Improving existing river irrigation systems;

3. Supplementing present systems with shallow and tube wells;

4. Educating farmers to use water supplies properly;

5. Getting the optimum use of water on land now under water command. When this phase has progressed satisfactorily, attention can then be turned to construction of additional water storage and distribution systems and new land development.

To expedite this agricultural development the establishment of regional

development organizations should be supported. These organizations should have a great deal of autonomy to formulate and implement comprehensive and integrated programs for the regions they serve; should arrange for technical and professional personnel to work directly and closely with farm operators; and must have resources they can draw on with a minimum of restraint from the central administration.

If development efforts are to be turned from transposing the physical environment to energies directed at the farmer, what information exists that explains in detail the Afghan farmer's social and economic environment? Surprisingly little.

It is a widely held assumption in bureaucratic and administrative levels of Government that because technology is primitive and unchanging, religious fatalism is strong, and family and tribal allegiance all prevasive and stronger than economic values, all innovations in technology will directly affect human relationships and religious traditions and will thus be accorded culturally based resistance and obstruction. Whatever studies have been done in the country seem to contradict this assumption; and find, on the other hand, that the major problems of Afghan agriculture do not lie in the psyches of individual farmers, but in simple practical problems of the physical environment, of supplies, credit and markets.

d. In The Afghan Farmer; Report of a Survey, 1/ Whiting and Hughes

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1/ The Afghan Farmer; Report of a Survey, research conducted for Robert R. Nathan Associates, Inc., under contract from USAID/A, 1970

in collaboration with Afghans, undertook a survey of seven selected villages. The villages selected were not representative of the national picture in geographic terms, as the western and northwestern areas were not in the sample. Nor were the farms chosen representative of land tenure concentration. The farms chosen were strongly skewed in favor of areas of high agricultural potential, favorably located relative to irrigation resources, roads, markets, and agricultural extension centers. (However, even in these areas, the agricultural potential has not even been scratched.) The summary of findings:

> We believe that the clearest result of this study is the paramount and prior importance of the situation in which the farmer must operate. . . . in our sample, at least, attitudes toward technological change are already highly positive, farmers do not appear to suffer mental inflexibility and their personal characteristics do not seem the important impediments to the spread of innovations . . . About half of the farmers who had not tried the innovations and to whom they were relevant said they had not tried them because supplies could not be obtained. Another quarter gave as their reason for non-trial, the lack of money or credit to purchase inputs required for innovation. A final quarter indicated that they were not convinced of the innovation's value or had not heard of it. . . What impedes adoption is the lack of supplies and credit to adopt the few innovations that have surfaced. 1/

What is clearly lacking is effective programs in agricultural research, extension, credit and modern farm production supplies.

## 2. THE SOCIAL AND POLITICAL STRUCTURE 2/

General: This section outlines and illustrates the general socio-

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1/ Ibid., p. 52-55

2/ Scott, Richard B., USAID Program Analyst, memo to Levintow, December 1972

political context within which USAID must function in the Helmand Valley. The outline cannot be considered complete but more of working hypothesis with room for variation in the patterns described and in interpretation. The system of social action outlined is a kind of montage consisting of general patterns gleaned from the literature on Islamic and Afghan social structure and history (especially Ottoman which the bureaucracy tends to resemble), and from events and attitudes witnessed, studied and recorded over a period of nearly two years in the Helmand.

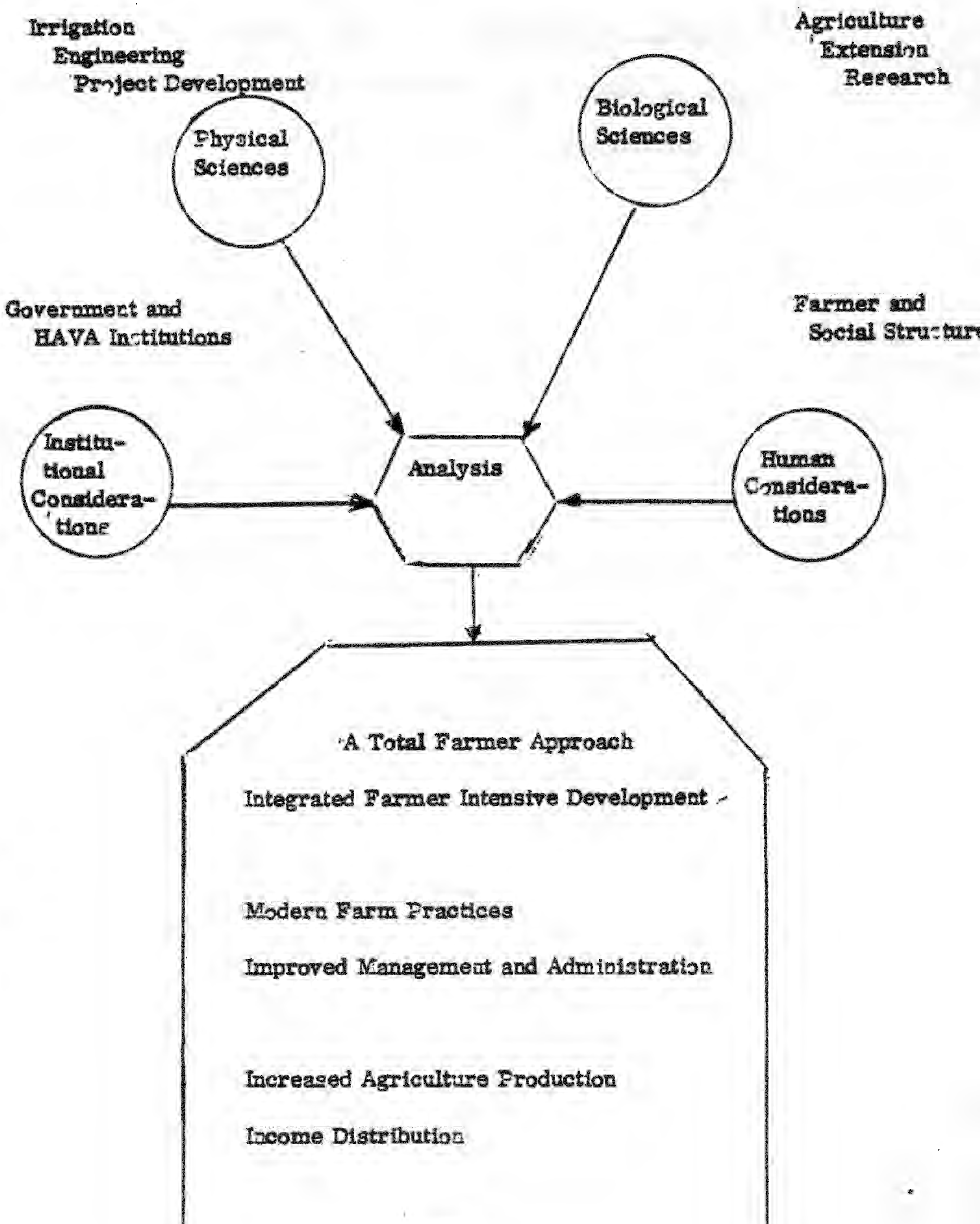
Understanding a system: Our counterparts have frequently and consistently resisted any sort of major public information scheme, stating that they understand their own people better than foreigners can, and that they must use traditional methods to inform and gain local support for their actions. Their method was defined, by U.S. trained personnel, as being low-key gradual but thorough, acceptable within our frame of reference. Study of the local situation has shown that information activities between government and farmer are highly selective, limited in scope and frequently inaccurate. Given our counterparts' definition of method, however, numerous farmer actions and other unpredicatable events, for which our counterparts have their own explanations, tend to support their statements that imply an inscrutable social context for foreigners. I suggest that this inscrutability is a product of two related factors: the explanations of events and their causes given us by our counterparts are not accurate but a kind of (1) interpretation

is now called the Boghra canal, running separate branches to the flood plain and terrace areas. This plan also necessitated the construction of a much larger diversion dam intake along with many reinforced concrete outlets and drop structurs. All this work would require the use of modern equipment and engineering techniques far beyond what the Afghans themselves could supply.

As ambitious as the proposed irrigation scheme seemed, it was but one of many the RGA felt confident that it could implement and complete from its own resources. By the end of the Second World War, the RGA had accumulated substantial reserves of hard currency by selling foodstuffs to the allied armies in India and karakul on the London and New York markets. This hard currency reserve made the Afghans feel confident that they could not only finance several large infrastructural investments, but could effect a development takeoff independently. All that was lacking was the technical expertise and the equipment. The defeat of Germany and Japan ruled out approaches to either nation which had hitherto provided most of Afghanistan's engineering services. Of the victorious allies both Russia and Britain had long been considered foes of Afghanistan. The Americans appeared sufficiently remote, disinterested and well equipped to meet the need, so the RGA turned to the Idaho firm of Morrison-Knudsen (MK) to make proposals for the construction of major roads, electrification and irrigation projects throughout the country, including the H-A Valley.

# SUMMARY - HELMAND-ARGHANDAB VALLEY INTEGRATED FARMER-INTENSIVE DEVELOPMENT

## BASIC FRAMEWORK OF HAVA ANALYSIS JANUARY 1973



ADB is also likely to give favorable consideration to a $2 million equipment and vehicle loan for HAVA, that USAID has recommended to ADB, to include a technical assistance component for HAVA operations and maintenance.

# I. A HISTORY OF THE HELMAND AND ARGHANDAB VALLEYS PROJECT

SECTOR ANALYSIS

HELMAND - ARGHANDAB VALLEY REGION



An Analysis By: Lloyd Baron

Project Proposal: David Levintow

February, 1973

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The investment in the Helmand-Arghandab Valley has now resulted in the establishment of a basic infrastructure - which after years of problems of inadequate drainage - is capable of maintaining satisfactory "water command" of the existing major project areas. At the same time, the region's farmers have taken the critical first step required to move from subsistence farming to the management of modern inputs - fertilizer, improved seed, tractors, etc. - required for commercial farming able to produce a significant surplus.

Success of the improved grain varieties and the development of institutional facilities now beginning to deliver information, credit and other requirements of commercial farming, have established the potential of the region to rapidly accelerate production both in volume and diversification into higher value, exportable crops.

The optimum potential of the Valley cannot be achieved in the near term (within five years), however, unless a concentrated farmer-intensive, technical assistance effort is undertaken, aimed at correcting the human resources deficiencies of the farmers and the bureaucracy.

This technical assistance would serve to speed up the growth rate, increase the degree of capacity utilization and improve the efficiency of resource allocation.

Employing the existing massive irrigation infrastructure already in place, the Valley's farmers - using improved seeds and fertilizer financed in large measure through a recently established credit facility - have made a dramatic success of the "grain revolution." The Valley ranks first in the percentage of irrigated cropland employing these and other new inputs such as tractors and farm machinery - to the extent of becoming a major surplus grain exporting region for the rest of the country.

Now, given an intensive effort at accelerating human resource development, crop diversification, double cropping, land leveling and better on-farm water management can be facilitated.

This "second generation" change can rapidly increase agricultural output of high value, exportable crops.

The approach to this goal is through establishing an effective farmer information system and upgrading the competence of the HAVA staff.

At the same time capital project investments now being considered will be more closely scrutinized by providing technical assistance to HAVA's project development, and the present uncertainties about the amount and location of feasible groundwater resources will be replaced with a reliable data base to be established by a groundwater investigation program.

This will provide access to additional water and enable eventual pumping to supplement surface drainage required to control. salinzation and avoid waterlogging.

These efforts will lead to a more rapid growth rate of regional income; more efficient allocation of present and newly discovered resources, and a substantially greater and more rational degree of capacity utilization of the entire irrigation system.

The first major implementing vehicle for the transfer of agricultural technical assistance is a 14-man team tasked with establishment of a vastly improved farmer information delivery system, of which the establishment of a new HAVA Manpower Institution is an integral part.

The second vehicle is a smaller (7-man) engineering group to advise on project development and groundwater investigation.

Appropriate third country and U.S. training grants, together with the needed commodities to support the efforts of the two technicians teams, would be required.

The forward capital requirements for the Valley are expected to be met by the Asian Development Bank.

The ADB is now seriously considering financing the construction of the two flood diversion dams in the Chakhansur region, Kajakai spillway gates and the completion of a road to link the Helmand area with Iran - to provide another access to the sea (Bandar Abass).